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TABLES

FOR THE

TRUE ANOMALY

IN ELLIPTIC ORBITS

BY

FRANK SCHLESINGER AND STELLA UDICK

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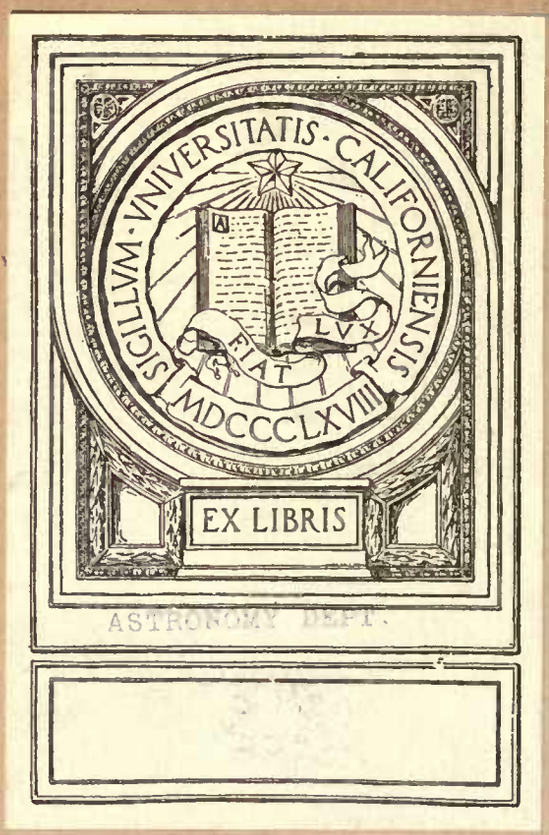

ASTRONOMY DEPT.

UNIV. OF CALIFORNIA

TABLES FOR THE TRUE ANOMALY IN ELLIPTIC ORBITS.

BY FRANK SCHLESINGER AND STELLA UDICK.

The following tables have been compiled to facilitate the computation of the orbits of spectroscopic and visual binaries. They should also prove useful for the computation of finding ephemerides for asteroids.

The true anomaly (v) of a body moving in an elliptic orbit is the angle between its radius-vector and the major axis; it is counted from periastron, or that end of the axis that corresponds to closest approach to the attracting body. The mean anomaly (M) is what this angle would be were the angular motion uniform. These two anomalies are connected by the equations:

$$E - e \sin E = M, \tag{1}$$

$$\tan \tfrac{1}{2}v = \sqrt{\frac{1+e}{1-e}} \tan \tfrac{1}{2}E, \tag{2}$$

in which E is an auxiliary called the eccentric anomaly. As the first of these equations is transcendental, the task of computing E from M is one of classic difficulty and is known as Kepler's problem. Among the numerous devices that have been provided for the solution of this problem, the two most useful are the "*Tafel zur Berechnung der wahre Anomalie*" published by the Berlin Rechen-Institut in 1892, and Astrand's "*Hülfstafeln zur Auflösung der Kepler'schen Problems,*" Leipzig, 1890. The former gives the values of $v - M$ to the hundredth part of a minute of arc; the arguments are each degree in M and each 20′ in ϕ, up to 20° 20′, ϕ being the angle whose sine is equal to the eccentricity of the orbit. Astrand's tables give the values of E to the thousandth part of a degree; the arguments are each degree in M and each hundredth in the eccentricity from 0.01 to 1.00. In addition each half-degree in M from 0°.5 to 19°.5 is included.

Both these tables were designed more especially with a view to facilitating the computation of asteroid orbits. The present tables give the values of v directly, to the hundredth part of a degree, the arguments being each degree in M and each hundredth in e from 0.01 to 0.77 inclusive. Any greater accuracy than

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0°.01 is superfluous for either spectroscopic or visual binaries. As it is frequently necessary to interpolate for the thousandths in the eccentricity, the tables have been arranged with this in view, and successive values of v for the same value of M (but different values of e) are found in the same horizontal line.

The usefulness of tables depends so largely upon their freedom from error that compilers should always state how they were computed and what precautions were taken to insure the accuracy of their printing. In the present case, v has been computed from the corresponding E in Astrand's tables by means of Equation (2) above. Bremiker's five-place logarithms were employed and the work was carried out to three decimal places. It was then checked in the following way: from $e = 0.01$ to $e = 0.10$, v was computed to three decimal places from the formula,

$$v = M + 2(E - M) + \tfrac{1}{4}e^2 \sin 2M + \tfrac{1}{3}e^3 \sin 3M + \text{etc.}$$

$E - M$ was taken from Astrand's tables. This expression is not conveniently convergent beyond $e = 0.10$; and v was therefore computed in duplicate from $e = 0.11$ to $e = 0.23$. Next, by means of the second differences (and the third whenever necessary) the computed values of v were checked throughout the whole extent of the tables. For the larger values of e, the method of differences is not servicable at the beginning of each table, and these values of v were accordingly checked by duplicate computations. The tables were now copied on sheets for the printer and were rounded off to two decimal places. The copying was checked by taking the differences upon these printer's sheets, that is the differences in v for successive values of M. When the first proof was received from the printer, it was subjected to three revisions; (1) it was compared with the original manuscript, one of us reading the manuscript while the other followed the proof. (2) The differences in v for successive values of M (but for the same values of e) were constructed from the printed tables and compared with the differences that had already been set into type. (3) The differences in v for successive values of e (but for the same values of M) were constructed from the printed table and were seen to run smoothly. The care with which the tables had been computed, copied and set into type may be inferred from the fact that two and one half errors were, on the average, found on each page of the proof. The second and third revisions together revealed about twenty-five errors.

Although the computations were carried out to three decimal places, and then rounded off to the nearest hundredth, the error in the printed numbers will occasionally exceed 0°.005. In all doubtful cases the computations were repeated with seven-place logarithms. But in order to make certain in some cases, it would have been necessary to start with values of E that extend beyond the third decimal place.

To obtain v corresponding to a value of M greater than 180°, the latter should be entered with the argument $360° - M$ and the resulting value of v counted as negative. Thus for $e = 0.07$ and $M = 250°$, we find opposite 110° that $v = -117°.30$, and this is equal to 242°.70.

Simple or linear interpolation for the fractional part of M is almost always sufficient; thus, if e does not exceed 0.50 the neglect of second differences cannot cause an error of more than 0°.01. With higher values of e this error becomes appreciable for a small portion of the tables near the beginning. Thus for $e = 0.77$ and M near 4° this error may reach 0°.13. The computer may take this into account by *always adding a correction to the numerical value of v that has been obtained by simple interpolation.* This correction is obtained by multiplying the second difference (the difference between two successive tabular differences) by the number in the following table. The argument, (x), is the fractional part of M, and may have any value from zero to unity.

x.	Factor for the Second Difference.
0.0	0.00
0.1	0.04
0.2	0.08
0.3	0.10
0.4	0.12
0.5	0.12
0.6	0.12
0.7	0.10
0.8	0.08
0.9	0.04
1.0	0.00

M	$e = .01$		$e = .02$		$e = .03$		$e = .04$		$e = .05$		$e = .06$		$e = .07$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
0°	0.00	1.02	0.00	1.04	0.00	1.06	0.00	1.08	0.00	1.11	0.00	1.13	0.00	1.15	0°
1	1.02	1.02	1.04	1.04	1.06	1.06	1.08	1.09	1.11	1.10	1.13	1.13	1.15	1.16	1
2	2.04	1.02	2.08	1.04	2.12	1.07	2.17	1.08	2.21	1.11	2.26	1.13	2.31	1.15	2
3	3.06	1.02	3.12	1.04	3.19	1.06	3.25	1.09	3.32	1.11	3.39	1.13	3.46	1.15	3
4	4.08	1.02	4.16	1.04	4.25	1.06	4.34	1.08	4.43	1.10	4.52	1.13	4.61	1.16	4
5	5.10	1.02	5.20	1.05	5.31	1.06	5.42	1.08	5.53	1.11	5.65	1.13	5.77	1.15	5
6	6.12	1.02	6.25	1.04	6.37	1.06	6.50	1.09	6.64	1.10	6.78	1.12	6.92	1.15	6
7	7.14	1.02	7.29	1.04	7.43	1.07	7.59	1.08	7.74	1.11	7.90	1.13	8.07	1.15	7
8	8.16	1.02	8.33	1.04	8.50	1.06	8.67	1.08	8.85	1.10	9.03	1.13	9.22	1.16	8
9	9.18	1.02	9.37	1.04	9.56	1.06	9.75	1.09	9.95	1.11	10.16	1.13	10.38	1.15	9
10	10.20	1.02	10.41	1.04	10.62	1.06	10.84	1.08	11.06	1.10	11.29	1.13	11.53	1.14	10
11	11.22	1.02	11.45	1.04	11.68	1.06	11.92	1.08	12.16	1.11	12.42	1.13	12.67	1.15	11
12	12.24	1.02	12.49	1.04	12.74	1.06	13.00	1.08	13.27	1.10	13.54	1.12	13.82	1.15	12
13	13.26	1.02	13.53	1.04	13.80	1.06	14.08	1.08	14.37	1.10	14.67	1.13	14.97	1.15	13
14	14.28	1.02	14.57	1.04	14.86	1.06	15.16	1.09	15.47	1.11	15.79	1.12	16.12	1.15	14
15	15.30	1.02	15.61	1.04	15.92	1.06	16.25	1.08	16.58	1.10	16.92	1.13	17.27	1.14	15
16	16.32	1.02	16.65	1.04	16.98	1.06	17.33	1.08	17.68	1.10	18.04	1.12	18.41	1.15	16
17	17.34	1.02	17.69	1.04	18.04	1.06	18.41	1.08	18.78	1.10	19.17	1.13	19.56	1.15	17
18	18.36	1.02	18.72	1.03	19.10	1.06	19.49	1.08	19.88	1.10	20.29	1.12	20.70	1.14	18
19	19.38	1.02	19.76	1.04	20.16	1.06	20.57	1.08	20.98	1.10	21.41	1.12	21.85	1.15	19
		1.02		1.04		1.06		1.07		1.10		1.12		1.14	
20	20.40	1.01	20.80	1.04	21.22	1.06	21.64	1.08	22.08	1.10	22.53	1.12	22.99	1.14	20
21	21.41	1.02	21.84	1.04	22.28	1.05	22.72	1.08	23.18	1.10	23.65	1.12	24.13	1.14	21
22	22.43	1.02	22.88	1.04	23.33	1.06	23.80	1.08	24.28	1.10	24.77	1.12	25.27	1.14	22
23	23.45	1.02	23.92	1.03	24.39	1.06	24.88	1.08	25.37	1.09	25.89	1.12	26.41	1.14	23
24	24.47	1.02	24.95	1.04	25.45	1.05	25.95	1.07	26.47	1.10	27.00	1.11	27.54	1.13	24
								1.08		1.09		1.12		1.14	
25	25.49	1.02	25.99	1.04	26.50	1.06	27.03	1.07	27.56	1.10	28.12	1.11	28.68	1.13	25
26	26.51	1.02	27.03	1.03	27.56	1.05	28.10	1.08	28.66	1.09	29.23	1.11	29.81	1.14	26
27	27.53	1.01	28.06	1.04	28.61	1.06	29.18	1.07	29.75	1.10	30.34	1.11	30.95	1.13	27
28	28.54	1.02	29.10	1.04	29.67	1.05	30.25	1.07	30.85	1.09	31.45	1.12	32.08	1.13	28
29	29.56	1.02	30.14	1.03	30.72	1.06	31.32	1.08	31.94	1.09	32.57	1.10	33.21	1.12	29
30	30.58	1.02	31.17	1.04	31.78	1.05	32.40	1.07	33.03	1.09	33.67	1.11	34.33	1.13	30
31	31.60	1.01	32.21	1.03	32.83	1.05	33.47	1.07	34.12	1.08	34.78	1.11	35.46	1.13	31
32	32.61	1.02	33.24	1.03	33.88	1.05	34.54	1.07	35.20	1.09	35.89	1.10	36.59	1.12	32
33	33.63	1.02	34.27	1.04	34.93	1.05	35.61	1.06	36.29	1.09	36.99	1.11	37.71	1.12	33
34	34.65	1.01	35.31	1.03	35.98	1.05	36.67	1.07	37.38	1.08	38.10	1.10	38.83	1.12	34
35	35.66	1.02	36.34	1.03	37.03	1.05	37.74	1.07	38.46	1.08	39.20	1.10	39.95	1.12	35
36	36.68	1.02	37.37	1.04	38.08	1.05	38.81	1.06	39.54	1.09	40.30	1.10	41.07	1.11	36
37	37.70	1.01	38.41	1.03	39.13	1.05	39.87	1.07	40.63	1.08	41.40	1.09	42.18	1.12	37
38	38.71	1.02	39.44	1.03	40.18	1.05	40.94	1.06	41.71	1.08	42.49	1.10	43.30	1.11	38
39	39.73	1.01	40.47	1.03	41.23	1.04	42.00	1.06	42.79	1.07	43.59	1.10	44.41	1.11	39
40	40.74	1.02	41.50	1.03	42.27	1.05	43.06	1.06	43.86	1.08	44.69	1.09	45.52	1.10	40
41	41.76	1.01	42.53	1.03	43.32	1.04	44.12	1.06	44.94	1.08	45.78	1.09	46.62	1.11	41
42	42.77	1.02	43.56	1.03	44.36	1.05	45.18	1.06	46.02	1.07	46.87	1.08	47.73	1.10	42
43	43.79	1.01	44.59	1.03	45.41	1.04	46.24	1.06	47.09	1.07	47.95	1.09	48.83	1.10	43
44	44.80	1.02	45.62	1.03	46.45	1.05	47.30	1.06	48.16	1.07	49.04	1.09	49.93	1.10	44
45	45.82	1.01	46.65	1.03	47.50	1.04	48.36	1.05	49.23	1.07	50.13	1.08	51.03	1.10	45
46	46.83	1.02	47.68	1.03	48.54	1.04	49.41	1.06	50.30	1.07	51.21	1.08	52.13	1.10	46
47	47.85	1.01	48.71	1.02	49.58	1.04	50.47	1.05	51.37	1.07	52.29	1.08	53.23	1.09	47
48	48.86	1.01	49.73	1.03	50.62	1.04	51.52	1.05	52.44	1.06	53.37	1.08	54.32	1.09	48
49	49.87	1.01	50.76	1.02	51.66	1.04	52.57	1.06	53.50	1.07	54.45	1.07	55.41	1.09	49
50	50.88	1.02	51.78	1.03	52.70	1.03	53.63	1.05	54.57	1.06	55.52	1.08	56.50	1.08	50
51	51.90	1.01	52.81	1.02	53.73	1.04	54.68	1.04	55.63	1.06	56.60	1.07	57.58	1.08	51
52	52.91	1.01	53.83	1.03	54.77	1.04	55.72	1.05	56.69	1.06	57.67	1.07	58.66	1.09	52
53	53.92	1.01	54.86	1.02	55.81	1.03	56.77	1.05	57.75	1.06	58.74	1.07	59.75	1.07	53
54	54.93	1.01	55.88	1.02	56.84	1.04	57.82	1.04	58.81	1.05	59.81	1.06	60.82	1.08	54
55	55.94	1.01	56.90	1.03	57.88	1.03	58.86	1.05	59.86	1.06	60.87	1.07	61.90	1.07	55
56	56.95	1.02	57.93	1.02	58.91	1.03	59.91	1.04	60.92	1.05	61.94	1.06	62.97	1.07	56
57	57.97	1.01	58.95	1.02	59.94	1.03	60.95	1.04	61.97	1.05	63.00	1.06	64.04	1.07	57
58	58.98	1.01	59.97	1.02	60.97	1.03	61.99	1.04	63.02	1.05	64.06	1.06	65.11	1.07	58
59	59.99	1.01	60.99	1.02	62.00	1.03	63.03	1.04	64.07	1.05	65.12	1.05	66.18	1.06	59
60	61.00		62.01		63.03		64.07		65.12		66.17		67.24		60

M	$e = .01$		$e = .02$		$e = .03$		$e = .04$		$e = .05$		$e = .06$		$e = .07$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60	61.00	1.01	62.01	1.02	63.03	1.03	64.07	1.03	65.12	1.04	66.17	1.06	67.24	1.06	60
61	62.01	1.01	63.03	1.02	64.06	1.03	65.10	1.04	66.16	1.04	67.23	1.05	68.30	1.06	61
62	63.02	1.01	64.05	1.01	65.09	1.02	66.14	1.04	67.20	1.05	68.28	1.05	69.36	1.06	62
63	64.03	1.01	65.06	1.02	66.11	1.03	67.18	1.03	68.25	1.04	69.33	1.05	70.42	1.05	63
64	65.04	1.00	66.08	1.02	67.14	1.02	68.21	1.03	69.29	1.04	70.38	1.04	71.47	1.06	64
65	66.04		67.10		68.16		69.24		70.33		71.42		72.53		65
66	67.05	1.01	68.12	1.02	69.19	1.03	70.27	1.03	71.36	1.03	72.47	1.05	73.58	1.05	66
67	68.06	1.01	69.13	1.01	70.21	1.02	71.30	1.03	72.40	1.04	73.51	1.04	74.62	1.04	67
68	69.07	1.01	70.14	1.01	71.23	1.02	72.33	1.03	73.43	1.03	74.54	1.03	75.67	1.05	68
69	70.08	1.01	71.16	1.02	72.25	1.02	73.35	1.02	74.46	1.03	75.58	1.04	76.71	1.04	69
70	71.08	1.00	72.17	1.01	73.27	1.02	74.38	1.03	75.49	1.03	76.62	1.04	77.75	1.04	70
71	72.09	1.01	73.18	1.01	74.29	1.02	75.40	1.02	76.52	1.03	77.65	1.03	78.78	1.03	71
72	73.09	1.00	74.20	1.02	75.30	1.01	76.42	1.02	77.55	1.03	78.68	1.03	79.81	1.03	72
73	74.10	1.01	75.21	1.01	76.32	1.02	77.44	1.02	78.57	1.02	79.71	1.03	80.85	1.04	73
74	75.10	1.00	76.22	1.01	77.34	1.01	78.46	1.02	79.59	1.03	80.73	1.02	81.88	1.03	74
75	76.11	1.01	77.23	1.01	78.35	1.01	79.48	1.02	80.62	1.02	81.76	1.02	82.90	1.02	75
76	77.12	1.00	78.24	1.01	79.36	1.01	80.50	1.01	81.64	1.01	82.78	1.02	83.92	1.03	76
77	78.12	1.00	79.25	1.00	80.37	1.02	81.51	1.01	82.65	1.02	83.80	1.01	84.95	1.02	77
78	79.12	1.01	80.25	1.01	81.39	1.01	82.52	1.02	83.67	1.01	84.81	1.02	85.97	1.01	78
79	80.13	1.00	81.26	1.01	82.40	1.01	83.54	1.01	84.68	1.02	85.83	1.01	86.98	1.02	79
80	81.13	1.00	82.27	1.00	83.41	1.00	84.55	1.01	85.70	1.01	86.84	1.01	88.00	1.01	80
81	82.13	1.01	83.27	1.01	84.41	1.01	85.56	1.01	86.71	1.00	87.85	1.01	89.01	1.01	81
82	83.14	1.00	84.28	1.00	85.42	1.00	86.57	1.00	87.71	1.01	88.86	1.01	90.02	1.00	82
83	84.14	1.00	85.28	1.01	86.42	1.01	87.57	1.01	88.72	1.01	89.87	1.01	91.02	1.00	83
84	85.14	1.00	86.29	1.00	87.43	1.00	88.58	1.00	89.73	1.00	90.88	1.00	92.02	1.01	84
85	86.14	1.00	87.29	1.00	88.43	1.01	89.58	1.00	90.73	1.00	91.88	1.00	93.03	0.99	85
86	87.14	1.01	88.29	1.00	89.44	1.00	90.58	1.00	91.73	1.00	92.88	1.00	94.02	1.00	86
87	88.15	1.00	89.29	1.00	90.44	1.00	91.58	1.00	92.73	1.00	93.88	0.99	95.02	0.99	87
88	89.15	1.00	90.29	1.00	91.44	1.00	92.58	1.00	93.73	0.99	94.87	1.00	96.01	1.00	88
89	90.15	1.00	91.29	1.00	92.44	1.00	93.58	1.00	94.72	1.00	95.87	0.99	97.01	0.98	89
90	91.15	1.00	92.29	1.00	93.44	0.99	94.58	0.99	95.72	0.99	96.86	0.99	97.99	0.99	90
91	92.15	1.00	93.29	1.00	94.43	1.00	95.57	1.00	96.71	0.99	97.85	0.99	98.98	0.98	91
92	93.15	0.99	94.29	1.00	95.43	0.99	96.57	0.99	97.70	0.99	98.84	0.98	99.96	0.99	92
93	94.14	1.00	95.29	0.99	96.42	1.00	97.56	0.99	98.69	0.99	99.82	0.99	100.95	0.98	93
94	95.14	1.00	96.28	0.99	97.42	0.99	98.55	0.99	99.68	0.99	100.81	0.98	101.93	0.97	94
95	96.14	1.00	97.28	0.99	98.41	0.99	99.54	0.99	100.67	0.98	101.79	0.98	102.90	0.98	95
96	97.14	1.00	98.27	1.00	99.40	0.99	100.53	0.99	101.65	0.98	102.77	0.98	103.88	0.97	96
97	98.14	1.00	99.27	0.99	100.39	0.99	101.52	0.98	102.63	0.98	103.75	0.97	104.85	0.97	97
98	99.14	0.99	100.26	0.99	101.38	0.99	102.50	0.99	103.61	0.98	104.72	0.98	105.82	0.97	98
99	100.13	1.00	101.25	1.00	102.37	0.99	103.49	0.98	104.59	0.98	105.70	0.97	106.79	0.97	99
100	101.13	0.99	102.25	0.99	103.36	0.99	104.47	0.98	105.57	0.98	106.67	0.97	107.76	0.96	100
101	102.12	1.00	103.24	0.99	104.35	0.99	105.45	0.98	106.55	0.97	107.64	0.97	108.72	0.96	101
102	103.12	0.99	104.23	0.99	105.34	0.98	106.43	0.98	107.52	0.98	108.61	0.96	109.68	0.96	102
103	104.11	1.00	105.22	0.99	106.32	0.98	107.41	0.98	108.50	0.97	109.57	0.97	110.64	0.96	103
104	105.11	0.99	106.21	0.99	107.30	0.99	108.39	0.98	109.47	0.97	110.54	0.96	111.60	0.95	104
105	106.10	1.00	107.20	0.99	108.29	0.98	109.37	0.97	110.44	0.97	111.50	0.96	112.55	0.96	105
106	107.10	0.99	108.19	0.99	109.27	0.98	110.34	0.98	111.41	0.96	112.46	0.96	113.51	0.95	106
107	108.09	0.99	109.18	0.98	110.25	0.98	111.32	0.97	112.37	0.97	113.42	0.96	114.46	0.95	107
108	109.08	1.00	110.16	0.99	111.23	0.98	112.29	0.97	113.34	0.96	114.38	0.95	115.41	0.94	108
109	110.08	0.99	111.15	0.99	112.21	0.98	113.26	0.97	114.30	0.96	115.33	0.96	116.35	0.95	109
110	111.07	0.99	112.14	0.98	113.19	0.97	114.23	0.97	115.26	0.96	116.29	0.95	117.30	0.94	110
111	112.06	1.00	113.12	0.99	114.16	0.98	115.20	0.97	116.22	0.96	117.24	0.95	118.24	0.94	111
112	113.06	0.99	114.11	0.98	115.14	0.98	116.17	0.96	117.18	0.96	118.19	0.95	119.18	0.94	112
113	114.05	0.99	115.09	0.98	116.12	0.97	117.13	0.97	118.14	0.96	119.14	0.94	120.12	0.94	113
114	115.04	0.99	116.07	0.99	117.09	0.97	118.10	0.97	119.10	0.95	120.08	0.95	121.06	0.93	114
115	116.03	0.99	117.06	0.98	118.06	0.98	119.07	0.96	120.05	0.96	121.03	0.94	121.99	0.94	115
116	117.02	0.99	118.04	0.98	119.04	0.97	120.03	0.96	121.01	0.95	121.97	0.94	122.93	0.93	116
117	118.01	1.00	119.02	0.98	120.01	0.97	120.99	0.96	121.96	0.95	122.91	0.94	123.86	0.93	117
118	119.01	0.99	120.00	0.98	120.98	0.97	121.95	0.96	122.91	0.95	123.85	0.94	124.79	0.92	118
119	120.00	0.99	120.98	0.98	121.95	0.97	122.91	0.96	123.86	0.95	124.79	0.94	125.71	0.93	119
120	120.99		121.96		122.92		123.87		124.81		125.73		126.64		120

M	$e = .01$		$e = .02$		$e = .03$		$e = .04$		$e = .05$		$e = .06$		$e = .07$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
120	120.99	0.99	121.96	0.98	122.92	0.97	123.87	0.96	124.81	0.94	125.73	0.94	126.64	0.92	120
121	121.98	0.99	122.94	0.98	123.89	0.97	124.83	0.95	125.75	0.95	126.67	0.93	127.56	0.93	121
122	122.97	0.98	123.92	0.98	124.86	0.97	125.78	0.96	126.70	0.94	127.60	0.93	128.49	0.92	122
123	123.95	0.99	124.90	0.97	125.83	0.96	126.74	0.95	127.64	0.95	128.53	0.93	129.41	0.92	123
124	124.94	0.99	125.87	0.98	126.79	0.97	127.69	0.96	128.59	0.94	129.46	0.93	130.33	0.91	124
125	125.93	0.99	126.85	0.98	127.76	0.96	128.65	0.95	129.53	0.94	130.39	0.93	131.24	0.92	125
126	126.92	0.99	127.83	0.97	128.72	0.96	129.60	0.95	130.47	0.93	131.32	0.93	132.16	0.91	126
127	127.91	0.99	128.80	0.98	129.68	0.97	130.55	0.95	131.40	0.94	132.25	0.92	133.07	0.92	127
128	128.90	0.98	129.78	0.97	130.65	0.96	131.50	0.95	132.34	0.94	133.17	0.93	133.99	0.91	128
129	129.88	0.99	130.75	0.98	131.61	0.96	132.45	0.95	133.28	0.93	134.10	0.92	134.90	0.91	129
130	130.87	0.99	131.73	0.97	132.57	0.96	133.40	0.95	134.21	0.94	135.02	0.92	135.81	0.91	130
131	131.86	0.98	132.70	0.97	133.53	0.96	134.35	0.94	135.15	0.93	135.94	0.92	136.72	0.90	131
132	132.84	0.99	133.67	0.98	134.49	0.96	135.29	0.95	136.08	0.94	136.86	0.92	137.62	0.91	132
133	133.83	0.99	134.65	0.97	135.45	0.96	136.24	0.94	137.02	0.93	137.78	0.91	138.53	0.90	133
134	134.82	0.98	135.62	0.97	136.41	0.96	137.18	0.95	137.95	0.93	138.69	0.92	139.43	0.90	134
135	135.80	0.99	136.59	0.97	137.37	0.95	138.13	0.94	138.88	0.93	139.61	0.92	140.33	0.90	135
136	136.79	0.98	137.56	0.98	138.32	0.96	139.07	0.94	139.81	0.92	140.53	0.91	141.23	0.90	136
137	137.77	0.99	138.54	0.97	139.28	0.96	140.01	0.95	140.73	0.93	141.44	0.91	142.13	0.90	137
138	138.76	0.99	139.51	0.97	140.24	0.95	140.96	0.94	141.66	0.93	142.35	0.91	143.03	0.90	138
139	139.75	0.98	140.48	0.97	141.19	0.96	141.90	0.94	142.59	0.92	143.26	0.91	143.93	0.90	139
140	140.73	0.98	141.45	0.97	142.15	0.95	142.84	0.94	143.51	0.92	144.18	0.90	144.83	0.89	140
141	141.71	0.99	142.42	0.96	143.10	0.95	143.78	0.93	144.43	0.93	145.08	0.91	145.72	0.89	141
142	142.70	0.98	143.38	0.97	144.05	0.96	144.71	0.94	145.36	0.92	145.99	0.91	146.61	0.90	142
143	143.68	0.99	144.35	0.97	145.01	0.95	145.65	0.94	146.28	0.92	146.90	0.91	147.51	0.89	143
144	144.67	0.98	145.32	0.97	145.96	0.95	146.59	0.93	147.20	0.92	147.81	0.90	148.40	0.89	144
145	145.65	0.98	146.29	0.97	146.91	0.95	147.52	0.94	148.12	0.93	148.71	0.91	149.29	0.89	145
146	146.63	0.99	147.26	0.96	147.86	0.96	148.46	0.93	149.05	0.92	149.62	0.90	150.18	0.89	146
147	147.62	0.98	148.22	0.97	148.82	0.95	149.39	0.94	149.97	0.91	150.52	0.90	151.07	0.88	147
148	148.60	0.98	149.19	0.96	149.77	0.95	150.33	0.93	150.88	0.92	151.42	0.91	151.95	0.89	148
149	149.58	0.99	150.15	0.97	150.72	0.95	151.26	0.94	151.80	0.92	152.33	0.90	152.84	0.89	149
150	150.57	0.98	151.12	0.97	151.67	0.94	152.20	0.93	152.72	0.91	153.23	0.90	153.73	0.88	150
151	151.55	0.98	152.09	0.96	152.61	0.95	153.13	0.93	153.63	0.92	154.13	0.90	154.61	0.88	151
152	152.53	0.98	153.05	0.97	153.56	0.95	154.06	0.93	154.55	0.91	155.03	0.90	155.49	0.89	152
153	153.51	0.99	154.02	0.96	154.51	0.95	154.99	0.93	155.46	0.92	155.93	0.89	156.38	0.88	153
154	154.50	0.98	154.98	0.97	155.46	0.95	155.92	0.93	156.38	0.91	156.82	0.90	157.26	0.88	154
155	155.48	0.98	155.95	0.96	156.41	0.94	156.85	0.93	157.29	0.91	157.72	0.90	158.14	0.88	155
156	156.46	0.98	156.91	0.97	157.35	0.95	157.78	0.93	158.20	0.92	158.62	0.89	159.02	0.88	156
157	157.44	0.99	157.88	0.96	158.30	0.94	158.71	0.93	159.12	0.91	159.51	0.90	159.90	0.88	157
158	158.43	0.98	158.84	0.96	159.24	0.95	159.64	0.93	160.03	0.91	160.41	0.89	160.78	0.88	158
159	159.41	0.98	159.80	0.97	160.19	0.95	160.57	0.93	160.94	0.91	161.30	0.90	161.66	0.87	159
160	160.39	0.98	160.77	0.96	161.14	0.94	161.50	0.92	161.85	0.91	162.20	0.89	162.53	0.88	160
161	161.37	0.98	161.73	0.96	162.08	0.94	162.42	0.93	162.76	0.91	163.09	0.89	163.41	0.88	161
162	162.35	0.98	162.69	0.96	163.02	0.95	163.35	0.93	163.67	0.91	163.98	0.89	164.29	0.87	162
163	163.33	0.98	163.65	0.97	163.97	0.94	164.28	0.93	164.58	0.91	164.87	0.90	165.16	0.88	163
164	164.31	0.98	164.62	0.96	164.91	0.95	165.21	0.92	165.49	0.91	165.77	0.89	166.04	0.87	164
165	165.29	0.98	165.58	0.96	165.86	0.94	166.13	0.93	166.40	0.91	166.66	0.89	166.91	0.88	165
166	166.27	0.98	166.54	0.96	166.80	0.95	167.06	0.92	167.31	0.90	167.55	0.89	167.79	0.87	166
167	167.25	0.99	167.50	0.97	167.75	0.94	167.98	0.93	168.21	0.91	168.44	0.89	168.66	0.88	167
168	168.24	0.98	168.47	0.96	168.69	0.94	168.91	0.92	169.12	0.91	169.33	0.89	169.54	0.87	168
169	169.22	0.98	169.43	0.96	169.63	0.95	169.83	0.93	170.03	0.91	170.22	0.89	170.41	0.87	169
170	170.20	0.98	170.39	0.96	170.58	0.94	170.76	0.92	170.94	0.90	171.11	0.89	171.28	0.88	170
171	171.18	0.98	171.35	0.96	171.52	0.94	171.68	0.93	171.84	0.91	172.00	0.89	172.16	0.87	171
172	172.16	0.98	172.31	0.96	172.46	0.94	172.61	0.92	172.75	0.91	172.89	0.89	173.03	0.87	172
173	173.14	0.98	173.27	0.96	173.40	0.95	173.53	0.93	173.66	0.90	173.78	0.89	173.90	0.87	173
174	174.12	0.98	174.23	0.96	174.35	0.94	174.46	0.92	174.56	0.91	174.67	0.89	174.77	0.87	174
175	175.10	0.98	175.19	0.97	175.29	0.94	175.38	0.92	175.47	0.91	175.56	0.89	175.64	0.88	175
176	176.08	0.98	176.16	0.96	176.23	0.94	176.30	0.93	176.38	0.90	176.45	0.88	176.52	0.87	176
177	177.06	0.98	177.12	0.96	177.17	0.94	177.23	0.92	177.28	0.91	177.33	0.89	177.39	0.87	177
178	178.04	0.98	178.08	0.96	178.11	0.95	178.15	0.93	178.19	0.90	178.22	0.89	178.26	0.87	178
179	179.02	0.98	179.04	0.96	179.06	0.94	179.08	0.92	179.09	0.91	179.11	0.89	179.13	0.87	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .08$		$e = .09$		$e = .10$		$e = .11$		$e = .12$		$e = .13$		$e = .14$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
0	0.00	1.18	0.00	1.20	0.00	1.23	0.00	1.25	0.00	1.28	0.00	1.31	0.00	1.34	0
1	1.18	1.18	1.20	1.21	1.23	1.23	1.25	1.26	1.28	1.28	1.31	1.31	1.34	1.34	1
2	2.36	1.17	2.41	1.20	2.46	1.23	2.51	1.26	2.56	1.29	2.62	1.31	2.68	1.34	2
3	3.53	1.18	3.61	1.20	3.69	1.22	3.77	1.25	3.85	1.28	3.93	1.31	4.02	1.33	3
4	4.71	1.18	4.81	1.20	4.91	1.23	5.02	1.25	5.13	1.28	5.24	1.31	5.35	1.34	4
5	5.89	1.17	6.01	1.20	6.14	1.23	6.27	1.25	6.41	1.28	6.55	1.30	6.69	1.34	5
6	7.06	1.18	7.21	1.20	7.37	1.22	7.52	1.26	7.69	1.28	7.85	1.31	8.03	1.33	6
7	8.24	1.18	8.41	1.20	8.59	1.23	8.78	1.25	8.97	1.27	9.16	1.31	9.36	1.34	7
8	9.42	1.17	9.61	1.20	9.82	1.22	10.03	1.25	10.24	1.28	10.47	1.30	10.70	1.33	8
9	10.59	1.17	10.81	1.20	11.04	1.23	11.28	1.25	11.52	1.28	11.77	1.30	12.03	1.33	9
10	11.76	1.18	12.01	1.20	12.27	1.22	12.53	1.25	12.80	1.27	13.07	1.31	13.36	1.33	10
11	12.94	1.17	13.21	1.20	13.49	1.22	13.78	1.24	14.07	1.27	14.38	1.30	14.69	1.32	11
12	14.11	1.17	14.41	1.19	14.71	1.22	15.02	1.25	15.34	1.28	15.68	1.29	16.01	1.33	12
13	15.28	1.17	15.60	1.20	15.93	1.22	16.27	1.24	16.62	1.27	16.97	1.30	17.34	1.32	13
14	16.45	1.18	16.80	1.19	17.15	1.22	17.51	1.25	17.89	1.26	18.27	1.29	18.66	1.32	14
15	17.63	1.16	17.99	1.19	18.37	1.21	18.76	1.24	19.15	1.27	19.56	1.29	19.98	1.32	15
16	18.79	1.17	19.18	1.19	19.58	1.22	20.00	1.24	20.42	1.26	20.85	1.29	21.30	1.32	16
17	19.96	1.17	20.37	1.19	20.80	1.21	21.24	1.23	21.68	1.26	22.14	1.29	22.62	1.31	17
18	21.13	1.16	21.56	1.19	22.01	1.21	22.47	1.24	22.94	1.26	23.43	1.28	23.93	1.31	18
19	22.29	1.17	22.75	1.19	23.22	1.21	23.71	1.23	24.20	1.26	24.71	1.28	25.24	1.30	19
20	23.46	1.16	23.94	1.18	24.43	1.21	24.94	1.23	25.46	1.26	25.99	1.28	26.54	1.30	20
21	24.62	1.16	25.12	1.19	25.64	1.21	26.17	1.23	26.72	1.25	27.27	1.28	27.84	1.30	21
22	25.78	1.16	26.31	1.18	26.85	1.20	27.40	1.23	27.97	1.24	28.55	1.27	29.14	1.30	22
23	26.94	1.16	27.49	1.18	28.05	1.20	28.63	1.22	29.21	1.25	29.82	1.27	30.44	1.29	23
24	28.10	1.16	28.67	1.17	29.25	1.20	29.85	1.22	30.46	1.24	31.09	1.26	31.73	1.29	24
25	29.26	1.15	29.84	1.18	30.45	1.20	31.07	1.22	31.70	1.24	32.35	1.27	33.02	1.28	25
26	30.41	1.15	31.02	1.17	31.65	1.19	32.29	1.21	32.94	1.24	33.62	1.25	34.30	1.28	26
27	31.56	1.15	32.19	1.17	32.84	1.19	33.50	1.21	34.18	1.23	34.87	1.26	35.58	1.28	27
28	32.71	1.15	33.36	1.17	34.03	1.19	34.71	1.21	35.41	1.23	36.13	1.25	36.86	1.27	28
29	33.86	1.15	34.53	1.17	35.22	1.19	35.92	1.21	36.64	1.23	37.38	1.25	38.13	1.27	29
30	35.01	1.15	35.70	1.17	36.41	1.18	37.13	1.21	37.87	1.22	38.63	1.24	39.40	1.26	30
31	36.16	1.14	36.87	1.16	37.59	1.18	38.34	1.20	39.09	1.22	39.87	1.24	40.66	1.26	31
32	37.30	1.14	38.03	1.16	38.77	1.18	39.54	1.19	40.31	1.22	41.11	1.23	41.92	1.25	32
33	38.44	1.14	39.19	1.15	39.95	1.18	40.73	1.19	41.53	1.21	42.34	1.23	43.17	1.25	33
34	39.58	1.14	40.34	1.16	41.13	1.17	41.92	1.19	42.74	1.21	43.57	1.23	44.42	1.25	34
35	40.72	1.13	41.50	1.15	42.30	1.17	43.11	1.19	43.95	1.20	44.80	1.22	45.67	1.24	35
36	41.85	1.13	42.65	1.15	43.47	1.17	44.30	1.18	45.15	1.20	46.02	1.22	46.91	1.23	36
37	42.98	1.13	43.80	1.15	44.64	1.16	45.48	1.18	46.35	1.20	47.24	1.21	48.14	1.22	37
38	44.11	1.13	44.95	1.14	45.80	1.16	46.66	1.18	47.55	1.19	48.45	1.21	49.36	1.23	38
39	45.24	1.13	46.09	1.14	46.96	1.15	47.84	1.17	48.74	1.19	49.66	1.20	50.59	1.22	39
40	46.37	1.12	47.23	1.14	48.11	1.16	49.01	1.17	49.93	1.18	50.86	1.20	51.81	1.21	40
41	47.49	1.12	48.37	1.14	49.27	1.15	50.18	1.17	51.11	1.18	52.06	1.19	53.02	1.21	41
42	48.61	1.12	49.51	1.13	50.42	1.15	51.35	1.16	52.29	1.18	53.25	1.19	54.23	1.21	42
43	49.73	1.11	50.64	1.13	51.57	1.14	52.51	1.16	53.47	1.17	54.44	1.19	55.44	1.19	43
44	50.84	1.12	51.77	1.12	52.71	1.14	53.67	1.15	54.64	1.17	55.63	1.18	56.63	1.20	44
45	51.96	1.11	52.89	1.13	53.85	1.14	54.82	1.15	55.81	1.16	56.81	1.17	57.83	1.18	45
46	53.07	1.10	54.02	1.12	54.99	1.13	55.97	1.14	56.97	1.16	57.98	1.17	59.01	1.18	46
47	54.17	1.11	55.14	1.12	56.12	1.13	57.11	1.15	58.13	1.15	59.15	1.17	60.19	1.18	47
48	55.28	1.10	56.26	1.11	57.25	1.13	58.26	1.13	59.28	1.15	60.32	1.16	61.37	1.17	48
49	56.38	1.10	57.37	1.11	58.38	1.12	59.39	1.14	60.43	1.14	61.48	1.15	62.54	1.16	49
50	57.48	1.10	58.48	1.11	59.50	1.12	60.53	1.13	61.57	1.14	62.63	1.15	63.70	1.16	50
51	58.58	1.09	59.59	1.11	60.62	1.12	61.66	1.12	62.71	1.14	63.78	1.15	64.86	1.16	51
52	59.67	1.09	60.70	1.10	61.74	1.11	62.78	1.12	63.85	1.13	64.93	1.14	66.02	1.15	52
53	60.76	1.09	61.80	1.10	62.85	1.10	63.90	1.12	64.98	1.12	66.07	1.13	67.17	1.14	53
54	61.85	1.09	62.90	1.09	63.95	1.11	65.02	1.11	66.10	1.13	67.20	1.13	68.31	1.13	54
55	62.94	1.08	63.99	1.09	65.06	1.10	66.13	1.11	67.23	1.11	68.33	1.12	69.44	1.13	55
56	64.02	1.08	65.08	1.09	66.16	1.10	67.24	1.11	68.34	1.11	69.45	1.12	70.57	1.13	56
57	65.10	1.08	66.17	1.09	67.26	1.09	68.35	1.10	69.45	1.11	70.57	1.12	71.70	1.12	57
58	66.18	1.08	67.26	1.08	68.35	1.09	69.45	1.10	70.56	1.10	71.69	1.11	72.82	1.11	58
59	67.25	1.07	68.34	1.08	69.44	1.09	70.55	1.09	71.66	1.10	72.80	1.10	73.93	1.11	59
60	68.33	1.08	69.42	1.08	70.53	1.09	71.64	1.09	72.76	1.10	73.90	1.10	75.04	1.11	60

M	$e = .08$		$e = .09$		$e = .10$		$e = .11$		$e = .12$		$e = .13$		$e = .14$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60	68.33		69.42		70.53		71.64		72.76		73.90		75.04		60
		1.06		1.08		1.08		1.09		1.10		1.10		1.11	
61	69.39		70.50		71.61		72.73		73.86		75.00		76.15		61
		1.07		1.07		1.08		1.08		1.09		1.09		1.09	
62	70.46		71.57		72.69		73.81		74.95		76.09		77.24		62
		1.06		1.07		1.07		1.08		1.08		1.09		1.10	
63	71.52		72.64		73.76		74.89		76.03		77.18		78.34		63
		1.06		1.06		1.07		1.08		1.08		1.08		1.08	
64	72.58		73.70		74.83		75.97		77.11		78.26		79.42		64
		1.06		1.06		1.07		1.07		1.08		1.08		1.08	
65	73.64		74.76		75.90		77.04		78.19		79.34		80.50		65
		1.06		1.06		1.06		1.07		1.07		1.07		1.08	
66	74.70		75.82		76.96		78.11		79.26		80.41		81.58		66
		1.05		1.06		1.06		1.06		1.06		1.07		1.07	
67	75.75		76.88		78.02		79.17		80.32		81.48		82.65		67
		1.05		1.05		1.06		1.06		1.06		1.07		1.06	
68	76.80		77.93		79.08		80.23		81.38		82.55		83.71		68
		1.04		1.05		1.05		1.05		1.06		1.05		1.06	
69	77.84		78.98		80.13		81.28		82.44		83.60		84.77		69
		1.04		1.05		1.05		1.05		1.05		1.06		1.06	
70	78.88		80.03		81.18		82.33		83.49		84.66		85.83		70
		1.04		1.04		1.04		1.05		1.05		1.04		1.05	
71	79.92		81.07		82.22		83.38		84.54		85.70		86.88		71
		1.04		1.04		1.04		1.04		1.04		1.05		1.04	
72	80.96		82.11		83.26		84.42		85.58		86.75		87.92		72
		1.03		1.03		1.04		1.04		1.04		1.04		1.04	
73	81.99		83.14		84.30		85.46		86.62		87.79		88.96		73
		1.03		1.04		1.03		1.03		1.04		1.03		1.03	
74	83.02		84.18		85.33		86.49		87.66		88.82		89.99		74
		1.03		1.03		1.03		1.03		1.03		1.03		1.03	
75	84.05		85.21		86.36		87.52		88.69		89.85		91.02		75
		1.03		1.02		1.03		1.03		1.02		1.02		1.02	
76	85.08		86.23		87.39		88.55		89.71		90.87		92.04		76
		1.02		1.02		1.02		1.02		1.02		1.02		1.02	
77	86.10		87.25		88.41		89.57		90.73		91.89		93.06		77
		1.02		1.02		1.02		1.02		1.02		1.02		1.01	
78	87.12		88.27		89.43		90.59		91.75		92.91		94.07		78
		1.01		1.02		1.02		1.01		1.01		1.01		1.01	
79	88.13		89.29		90.45		91.60		92.76		93.92		95.08		79
		1.02		1.01		1.01		1.01		1.01		1.00		1.00	
80	89.15		90.30		91.46		92.61		93.77		94.92		96.08		80
		1.01		1.01		1.01		1.01		1.00		1.00		0.99	
81	90.16		91.31		92.47		93.62		94.77		95.92		97.07		81
		1.01		1.01		1.00		1.00		1.00		1.00		1.00	
82	91.17		92.32		93.47		94.62		95.77		96.92		98.07		82
		1.00		1.00		1.00		1.00		1.00		0.99		0.99	
83	92.17		93.32		94.47		95.62		96.77		97.91		99.06		83
		1.00		1.00		1.00		0.99		0.99		0.99		0.98	
84	93.17		94.32		95.47		96.61		97.76		98.90		100.04		84
		1.00		1.00		1.00		1.00		0.99		0.98		0.98	
85	94.17		95.32		96.47		97.61		98.75		99.88		101.02		85
		1.00		0.99		0.99		0.98		0.98		0.98		0.97	
86	95.17		96.31		97.46		98.59		99.73		100.86		101.99		86
		0.99		0.99		0.98		0.99		0.98		0.98		0.97	
87	96.16		97.30		98.44		99.58		100.71		101.84		102.96		87
		0.99		0.99		0.99		0.98		0.97		0.96		0.96	
88	97.15		98.29		99.43		100.56		101.68		102.80		103.92		88
		0.99		0.99		0.98		0.97		0.97		0.97		0.96	
89	98.14		99.28		100.41		101.53		102.65		103.77		104.88		89
		0.99		0.98		0.98		0.97		0.97		0.96		0.96	
90	99.13		100.26		101.39		102.50		103.62		104.73		105.84		90
		0.98		0.98		0.97		0.97		0.96		0.96		0.95	
91	100.11		101.24		102.36		103.47		104.58		105.69		106.79		91
		0.98		0.97		0.97		0.97		0.96		0.95		0.95	
92	101.09		102.21		103.33		104.44		105.54		106.64		107.74		92
		0.98		0.97		0.96		0.96		0.96		0.95		0.94	
93	102.07		103.18		104.29		105.40		106.50		107.59		108.68		93
		0.97		0.97		0.97		0.96		0.95		0.95		0.94	
94	103.04		104.15		105.26		106.36		107.45		108.54		109.62		94
		0.98		0.97		0.96		0.95		0.95		0.94		0.93	
95	104.02		105.12		106.22		107.31		108.40		109.48		110.55		95
		0.97		0.97		0.96		0.95		0.94		0.93		0.93	
96	104.99		106.09		107.18		108.26		109.34		110.41		111.48		96
		0.96		0.96		0.95		0.95		0.94		0.94		0.92	
97	105.95		107.05		108.13		109.21		110.28		111.35		112.40		97
		0.97		0.95		0.96		0.95		0.94		0.93		0.92	
98	106.92		108.00		109.09		110.16		111.22		112.28		113.32		98
		0.96		0.96		0.94		0.94		0.93		0.92		0.92	
99	107.88		108.96		110.03		111.10		112.15		113.20		114.24		99
		0.96		0.95		0.95		0.94		0.93		0.92		0.91	
100	108.84		109.91		110.98		112.04		113.08		114.12		115.15		100
		0.96		0.95		0.94		0.93		0.93		0.92		0.91	
101	109.80		110.86		111.92		112.97		114.01		115.04		116.06		101
		0.95		0.95		0.94		0.93		0.92		0.92		0.91	
102	110.75		111.81		112.86		113.90		114.93		115.96		116.97		102
		0.95		0.94		0.94		0.93		0.92		0.90		0.90	
103	111.70		112.75		113.80		114.83		115.85		116.86		117.87		103
		0.95		0.94		0.93		0.92		0.92		0.91		0.90	
104	112.65		113.69		114.73		115.75		116.77		117.77		118.77		104
		0.95		0.94		0.93		0.93		0.91		0.91		0.89	
105	113.60		114.63		115.66		116.68		117.68		118.68		119.66		105
		0.94		0.94		0.93		0.92		0.91		0.90		0.89	
106	114.54		115.57		116.59		117.60		118.59		119.58		120.55		106
		0.95		0.93		0.93		0.91		0.91		0.89		0.89	
107	115.49		116.50		117.52		118.51		119.50		120.47		121.44		107
		0.94		0.94		0.92		0.91		0.90		0.90		0.88	
108	116.43		117.44		118.44		119.42		120.40		121.37		122.32		108
		0.93		0.93		0.92		0.91		0.90		0.89		0.88	
109	117.36		118.37		119.36		120.33		121.30		122.26		123.20		109
		0.94		0.92		0.91		0.91		0.89		0.89		0.88	
110	118.30		119.29		120.27		121.24		122.19		123.15		124.08		110
		0.93		0.93		0.92		0.90		0.90		0.88		0.87	
111	119.23		120.22		121.19		122.14		123.09		124.03		124.95		111
		0.94		0.92		0.91		0.91		0.89		0.88		0.87	
112	120.17		121.14		122.10		123.05		123.98		124.91		125.82		112
		0.92		0.92		0.91		0.89		0.89		0.88		0.87	
113	121.09		122.06		123.01		123.94		124.87		125.79		126.69		113
		0.93		0.91		0.90		0.90		0.89		0.87		0.86	
114	122.02		122.97		123.91		124.84		125.76		126.66		127.55		114
		0.93		0.92		0.91		0.89		0.88		0.87		0.86	
115	122.95		123.89		124.82		125.73		126.64		127.53		128.41		115
		0.92		0.91		0.90		0.89		0.88		0.87		0.86	
116	123.87		124.80		125.72		126.62		127.52		128.40		129.27		116
		0.92		0.91		0.90		0.89		0.87		0.87		0.85	
117	124.79		125.71		126.62		127.51		128.39		129.27		130.12		117
		0.92		0.91		0.89		0.89		0.88		0.86		0.86	
118	125.71		126.62		127.51		128.40		129.27		130.13		130.98		118
		0.91		0.90		0.90		0.88		0.87		0.86		0.84	
119	126.62		127.52		128.41		129.28		130.14		130.99		131.82		119
		0.92		0.91		0.89		0.88		0.87		0.86		0.85	
120	127.54		128.43		129.30		130.16		131.01		131.85		132.67		120

M	$e = .08$		$e = .09$		$e = .10$		$e = .11$		$e = .12$		$e = .13$		$e = .14$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	127.54	0.91	128.43	0.90	129.30	0.89	130.16	0.88	131.01	0.87	131.85	0.85	132.67	0.84	120°
121	128.45	0.91	129.33	0.89	130.19	0.89	131.04	0.87	131.88	0.86	132.70	0.85	133.51	0.84	121
122	129.36	0.91	130.22	0.89	131.08	0.89	131.91	0.88	132.74	0.86	133.55	0.85	134.35	0.84	122
123	130.27	0.91	131.12	0.90	131.96	0.88	132.79	0.87	133.60	0.86	134.40	0.85	135.19	0.83	123
124	131.18	0.90	132.02	0.90	132.84	0.88	133.66	0.87	134.46	0.86	135.25	0.85	136.02	0.83	124
125	132.08	0.91	132.91	0.89	133.72	0.88	134.53	0.86	135.31	0.85	136.09	0.84	136.85	0.83	125
126	132.99	0.90	133.80	0.89	134.60	0.88	135.39	0.87	136.17	0.86	136.93	0.84	137.68	0.83	126
127	133.89	0.90	134.69	0.89	135.48	0.87	136.26	0.86	137.02	0.85	137.77	0.84	138.51	0.83	127
128	134.79	0.90	135.58	0.88	136.35	0.88	137.12	0.86	137.87	0.85	138.61	0.84	139.34	0.82	128
129	135.69	0.89	136.46	0.89	137.23	0.87	137.98	0.86	138.72	0.84	139.44	0.83	140.16	0.82	129
130	136.58	0.90	137.35	0.88	138.10	0.87	138.84	0.85	139.56	0.85	140.27	0.83	140.98	0.81	130
131	137.48	0.89	138.23	0.88	138.97	0.86	139.69	0.85	140.41	0.84	141.10	0.83	141.79	0.82	131
132	138.37	0.89	139.11	0.88	139.83	0.87	140.54	0.86	141.25	0.83	141.93	0.83	142.61	0.81	132
133	139.26	0.89	139.99	0.87	140.70	0.86	141.40	0.85	142.08	0.84	142.76	0.82	143.42	0.81	133
134	140.15	0.89	140.86	0.88	141.56	0.86	142.25	0.84	142.92	0.83	143.58	0.82	144.23	0.81	134
135	141.04	0.89	141.74	0.87	142.42	0.86	143.09	0.85	143.75	0.84	144.40	0.82	145.04	0.81	135
136	141.93	0.89	142.61	0.87	143.28	0.86	143.94	0.85	144.59	0.83	145.22	0.82	145.85	0.80	136
137	142.82	0.88	143.48	0.87	144.14	0.86	144.79	0.84	145.42	0.83	146.04	0.82	146.65	0.80	137
138	143.70	0.88	144.35	0.87	145.00	0.85	145.63	0.84	146.25	0.82	146.86	0.81	147.45	0.80	138
139	144.58	0.89	145.22	0.87	145.85	0.86	146.47	0.84	147.07	0.83	147.67	0.81	148.25	0.80	139
140	145.47	0.88	146.09	0.87	146.71	0.85	147.31	0.84	147.90	0.82	148.48	0.81	149.05	0.80	140
141	146.35	0.87	146.96	0.86	147.56	0.85	148.15	0.83	148.72	0.83	149.29	0.81	149.85	0.79	141
142	147.22	0.88	147.82	0.87	148.41	0.85	148.98	0.84	149.55	0.82	150.10	0.81	150.64	0.80	142
143	148.10	0.88	148.69	0.86	149.26	0.84	149.82	0.83	150.37	0.82	150.91	0.80	151.44	0.79	143
144	148.98	0.87	149.55	0.86	150.10	0.85	150.65	0.83	151.19	0.82	151.71	0.80	152.23	0.79	144
145	149.85	0.88	150.41	0.86	150.95	0.85	151.48	0.83	152.01	0.81	152.51	0.81	153.02	0.79	145
146	150.73	0.87	151.27	0.86	151.80	0.84	152.31	0.83	152.82	0.81	153.32	0.80	153.81	0.78	146
147	151.60	0.87	152.13	0.86	152.64	0.84	153.14	0.83	153.63	0.82	154.12	0.80	154.59	0.79	147
148	152.47	0.87	152.99	0.85	153.48	0.84	153.97	0.83	154.45	0.81	154.92	0.80	155.38	0.78	148
149	153.34	0.87	153.84	0.85	154.32	0.84	154.80	0.82	155.26	0.81	155.72	0.79	156.16	0.79	149
150	154.21	0.87	154.69	0.86	155.16	0.84	155.62	0.83	156.07	0.81	156.51	0.80	156.95	0.78	150
151	155.08	0.87	155.55	0.85	156.00	0.84	156.45	0.82	156.88	0.81	157.31	0.80	157.73	0.78	151
152	155.95	0.87	156.40	0.85	156.84	0.83	157.27	0.82	157.69	0.81	158.11	0.79	158.51	0.77	152
153	156.82	0.86	157.25	0.85	157.67	0.84	158.09	0.82	158.50	0.80	158.90	0.79	159.28	0.78	153
154	157.68	0.87	158.10	0.85	158.51	0.83	158.91	0.82	159.30	0.81	159.69	0.79	160.06	0.78	154
155	158.55	0.87	158.95	0.85	159.34	0.84	159.73	0.82	160.11	0.80	160.48	0.79	160.84	0.77	155
156	159.42	0.86	159.80	0.85	160.18	0.83	160.55	0.82	160.91	0.80	161.27	0.78	161.61	0.78	156
157	160.28	0.86	160.65	0.84	161.01	0.83	161.37	0.81	161.71	0.80	162.05	0.78	162.39	0.77	157
158	161.14	0.86	161.49	0.85	161.84	0.83	162.18	0.82	162.52	0.81	162.84	0.79	163.16	0.77	158
159	162.00	0.86	162.34	0.85	162.67	0.83	163.00	0.82	163.32	0.80	163.63	0.79	163.93	0.77	159
160	162.86	0.87	163.19	0.84	163.50	0.83	163.81	0.82	164.12	0.80	164.41	0.79	164.70	0.77	160
161	163.73	0.86	164.03	0.85	164.33	0.83	164.63	0.81	164.92	0.79	165.20	0.78	165.47	0.77	161
162	164.59	0.86	164.88	0.84	165.16	0.83	165.44	0.81	165.71	0.80	165.98	0.78	166.24	0.77	162
163	165.45	0.85	165.72	0.84	165.99	0.83	166.25	0.82	166.51	0.80	166.76	0.79	167.01	0.77	163
164	166.30	0.86	166.56	0.85	166.82	0.82	167.07	0.81	167.31	0.80	167.55	0.78	167.78	0.77	164
165	167.16	0.86	167.41	0.84	167.64	0.83	167.88	0.81	168.11	0.79	168.33	0.78	168.55	0.76	165
166	168.02	0.86	168.25	0.84	168.47	0.83	168.69	0.81	168.90	0.80	169.11	0.78	169.31	0.77	166
167	168.88	0.86	169.09	0.84	169.30	0.82	169.50	0.81	169.70	0.79	169.89	0.78	170.08	0.77	167
168	169.74	0.85	169.93	0.84	170.12	0.83	170.31	0.81	170.49	0.80	170.67	0.78	170.85	0.76	168
169	170.59	0.86	170.77	0.84	170.95	0.82	171.12	0.81	171.29	0.79	171.45	0.78	171.61	0.76	169
170	171.45	0.86	171.61	0.84	171.77	0.83	171.93	0.81	172.08	0.79	172.23	0.78	172.37	0.77	170
171	172.31	0.85	172.45	0.84	172.60	0.82	172.74	0.80	172.87	0.80	173.01	0.78	173.14	0.76	171
172	173.16	0.86	173.29	0.84	173.42	0.82	173.54	0.81	173.67	0.79	173.79	0.77	173.90	0.76	172
173	174.02	0.85	174.13	0.84	174.24	0.83	174.35	0.81	174.46	0.79	174.56	0.78	174.66	0.76	173
174	174.87	0.86	174.97	0.84	175.07	0.82	175.16	0.81	175.25	0.79	175.34	0.78	175.43	0.77	174
175	175.73	0.85	175.81	0.84	175.89	0.82	175.97	0.80	176.04	0.79	176.12	0.77	176.19	0.76	175
176	176.58	0.86	176.65	0.84	176.71	0.82	176.77	0.81	176.83	0.79	176.89	0.77	176.95	0.76	176
177	177.44	0.85	177.49	0.83	177.53	0.83	177.58	0.80	177.62	0.79	177.66	0.78	177.71	0.77	177
178	178.29	0.86	178.32	0.84	178.36	0.82	178.38	0.81	178.41	0.80	178.44	0.78	178.48	0.76	178
179	179.15	0.85	179.16	0.84	179.18	0.82	179.19	0.81	179.21	0.79	179.22	0.78	179.24	0.76	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .15$		$e = .16$		$e = .17$		$e = .18$		$e = .19$		$e = .20$		$e = .21$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
0°	0.00	1.37	0.00	1.40	0.00	1.43	0.00	1.46	0.00	1.50	0.00	1.53	0.00	1.56	0°
1	1.37	1.37	1.40	1.40	1.43	1.43	1.46	1.47	1.50	1.49	1.53	1.53	1.56	1.57	1
2	2.74	1.36	2.80	1.40	2.86	1.43	2.93	1.46	2.99	1.50	3.06	1.53	3.13	1.57	2
3	4.10	1.37	4.20	1.39	4.29	1.43	4.39	1.46	4.49	1.49	4.59	1.53	4.70	1.56	3
4	5.47	1.37	5.59	1.40	5.72	1.43	5.85	1.46	5.98	1.50	6.12	1.53	6.26	1.56	4
5	6.84	1.36	6.99	1.40	7.15	1.42	7.31	1.46	7.48	1.49	7.65	1.52	7.82	1.56	5
6	8.20	1.37	8.39	1.39	8.57	1.43	8.77	1.45	8.97	1.49	9.17	1.53	9.38	1.56	6
7	9.57	1.36	9.78	1.39	10.00	1.42	10.22	1.46	10.46	1.48	10.70	1.52	10.94	1.56	7
8	10.93	1.36	11.17	1.39	11.42	1.42	11.68	1.45	11.94	1.49	12.22	1.51	12.50	1.56	8
9	12.29	1.36	12.56	1.39	12.84	1.42	13.13	1.45	13.43	1.48	13.73	1.52	14.05	1.55	9
10	13.65	1.36	13.95	1.39	14.26	1.42	14.58	1.45	14.91	1.48	15.25	1.51	15.60	1.54	10
11	15.01	1.35	15.34	1.38	15.68	1.41	16.03	1.44	16.39	1.47	16.76	1.51	17.14	1.54	11
12	16.36	1.36	16.72	1.38	17.09	1.41	17.47	1.44	17.86	1.48	18.27	1.50	18.68	1.54	12
13	17.72	1.35	18.10	1.38	18.50	1.41	18.91	1.44	19.34	1.46	19.77	1.50	20.22	1.53	13
14	19.07	1.34	19.48	1.38	19.91	1.40	20.35	1.43	20.80	1.47	21.27	1.49	21.75	1.53	14
15	20.41	1.35	20.86	1.37	21.31	1.40	21.78	1.43	22.27	1.46	22.76	1.49	23.28	1.52	15
16	21.76	1.34	22.23	1.37	22.71	1.40	23.21	1.43	23.73	1.45	24.25	1.49	24.80	1.51	16
17	23.10	1.34	23.60	1.36	24.11	1.39	24.64	1.42	25.18	1.45	25.74	1.47	26.31	1.50	17
18	24.44	1.33	24.96	1.36	25.50	1.39	26.06	1.41	26.63	1.44	27.21	1.47	27.81	1.50	18
19	25.77	1.33	26.32	1.36	26.89	1.38	27.47	1.41	28.07	1.44	28.68	1.47	29.31	1.50	19
20	27.10	1.33	27.68	1.35	28.27	1.38	28.88	1.41	29.51	1.43	30.15	1.46	30.81	1.49	20
21	28.43	1.33	29.03	1.35	29.65	1.38	30.29	1.40	30.94	1.43	31.61	1.45	32.30	1.48	21
22	29.76	1.32	30.38	1.35	31.03	1.37	31.69	1.39	32.37	1.42	33.06	1.45	33.78	1.47	22
23	31.08	1.31	31.73	1.34	32.40	1.36	33.08	1.39	33.79	1.41	34.51	1.44	35.25	1.47	23
24	32.39	1.31	33.07	1.33	33.76	1.36	34.47	1.39	35.20	1.41	35.95	1.43	36.72	1.45	24
25	33.70	1.31	34.40	1.33	35.12	1.35	35.86	1.37	36.61	1.40	37.38	1.43	38.17	1.45	25
26	35.01	1.30	35.73	1.33	36.47	1.35	37.23	1.37	38.01	1.39	38.81	1.41	39.62	1.44	26
27	36.31	1.30	37.06	1.32	37.82	1.34	38.60	1.36	39.40	1.39	40.22	1.41	41.06	1.43	27
28	37.61	1.29	38.38	1.31	39.16	1.34	39.96	1.36	40.79	1.38	41.63	1.40	42.49	1.43	28
29	38.90	1.29	39.69	1.31	40.50	1.33	41.32	1.35	42.17	1.37	43.03	1.39	43.92	1.41	29
30	40.19	1.28	41.00	1.30	41.83	1.32	42.67	1.35	43.54	1.36	44.42	1.39	45.33	1.40	30
31	41.47	1.28	42.30	1.30	43.15	1.32	44.02	1.33	44.90	1.36	45.81	1.37	46.73	1.40	31
32	42.75	1.27	43.60	1.29	44.47	1.31	45.35	1.33	46.26	1.35	47.18	1.37	48.13	1.38	32
33	44.02	1.27	44.89	1.29	45.78	1.30	46.68	1.32	47.61	1.34	48.55	1.36	49.51	1.38	33
34	45.29	1.26	46.18	1.28	47.08	1.30	48.00	1.32	48.95	1.33	49.91	1.35	50.89	1.37	34
35	46.55	1.26	47.46	1.27	48.38	1.29	49.32	1.31	50.28	1.32	51.26	1.34	52.26	1.36	35
36	47.81	1.25	48.73	1.27	49.67	1.28	50.63	1.30	51.60	1.32	52.60	1.33	53.62	1.34	36
37	49.06	1.25	50.00	1.26	50.95	1.28	51.93	1.29	52.92	1.31	53.93	1.33	54.96	1.34	37
38	50.31	1.24	51.26	1.25	52.23	1.27	53.22	1.29	54.23	1.30	55.26	1.31	56.30	1.33	38
39	51.55	1.23	52.51	1.25	53.50	1.27	54.51	1.28	55.53	1.29	56.57	1.31	57.63	1.32	39
40	52.78	1.23	53.76	1.25	54.77	1.25	55.79	1.27	56.82	1.29	57.88	1.30	58.95	1.31	40
41	54.01	1.22	55.01	1.23	56.02	1.25	57.06	1.26	58.11	1.27	59.18	1.28	60.26	1.30	41
42	55.23	1.22	56.24	1.23	57.27	1.24	58.32	1.25	59.38	1.27	60.46	1.28	61.56	1.29	42
43	56.45	1.21	57.47	1.22	58.51	1.24	59.57	1.25	60.65	1.26	61.74	1.27	62.85	1.28	43
44	57.66	1.20	58.69	1.22	59.75	1.23	60.82	1.24	61.91	1.25	63.01	1.26	64.13	1.27	44
45	58.86	1.20	59.91	1.21	60.98	1.22	62.06	1.23	63.16	1.24	64.27	1.25	65.40	1.26	45
46	60.06	1.19	61.12	1.20	62.20	1.21	63.29	1.22	64.40	1.23	65.52	1.25	66.66	1.25	46
47	61.25	1.19	62.32	1.20	63.41	1.21	64.51	1.22	65.63	1.23	66.77	1.23	67.91	1.24	47
48	62.44	1.18	63.52	1.19	64.62	1.20	65.73	1.21	66.86	1.21	68.00	1.22	69.15	1.23	48
49	63.62	1.17	64.71	1.18	65.82	1.19	66.94	1.20	68.07	1.21	69.22	1.22	70.38	1.22	49
50	64.79	1.17	65.89	1.18	67.01	1.18	68.14	1.19	69.28	1.20	70.44	1.20	71.60	1.22	50
51	65.96	1.16	67.07	1.17	68.19	1.18	69.33	1.18	70.48	1.19	71.64	1.20	72.82	1.20	51
52	67.12	1.16	68.24	1.16	69.37	1.17	70.51	1.18	71.67	1.18	72.84	1.19	74.02	1.19	52
53	68.28	1.15	69.40	1.16	70.54	1.16	71.69	1.17	72.85	1.18	74.03	1.18	75.21	1.19	53
54	69.43	1.14	70.56	1.15	71.70	1.16	72.86	1.16	74.03	1.16	75.21	1.17	76.40	1.17	54
55	70.57	1.14	71.71	1.14	72.86	1.15	74.02	1.15	75.19	1.16	76.38	1.16	77.57	1.16	55
56	71.71	1.13	72.85	1.14	74.01	1.14	75.17	1.15	76.35	1.15	77.54	1.15	78.73	1.16	56
57	72.84	1.13	73.99	1.13	75.15	1.13	76.32	1.14	77.50	1.14	78.69	1.14	79.89	1.14	57
58	73.97	1.12	75.12	1.12	76.28	1.13	77.46	1.13	78.64	1.13	79.83	1.14	81.03	1.14	58
59	75.09	1.11	76.24	1.12	77.41	1.12	78.59	1.12	79.77	1.13	80.97	1.13	82.17	1.13	59
60	76.20		77.36		78.53		79.71		80.90		82.10		83.30		60

M	$e = .15$		$e = .16$		$e = .17$		$e = .18$		$e = .19$		$e = .20$		$e = .21$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
60	76.20	1.11	77.36	1.11	78.53	1.12	79.71	1.12	80.90	1.12	82.10	1.11	83.30	1.12	60
61	77.31	1.10	78.47	1.10	79.65	1.10	80.83	1.11	82.02	1.11	83.21	1.11	84.42	1.11	61
62	78.41	1.09	79.57	1.10	80.75	1.10	81.94	1.10	83.13	1.10	84.32	1.10	85.53	1.10	62
63	79.50	1.09	80.67	1.10	81.85	1.10	83.04	1.09	84.23	1.09	85.42	1.10	86.63	1.10	63
64	80.59	1.08	81.76	1.09	82.94	1.09	84.13	1.09	85.32	1.09	86.52	1.08	87.72	1.09	64
65	81.67	1.08	82.85	1.09	84.03	1.09	85.22	1.09	86.41	1.08	87.60	1.08	88.80	1.08	65
66	82.75	1.07	83.93	1.08	85.11	1.08	86.30	1.07	87.49	1.07	88.68	1.07	89.88	1.06	66
67	83.82	1.07	85.00	1.07	86.18	1.07	87.37	1.06	88.56	1.06	89.75	1.06	90.94	1.06	67
68	84.89	1.06	86.07	1.07	87.25	1.06	88.43	1.06	89.62	1.06	90.81	1.05	92.00	1.05	68
69	85.95	1.05	87.13	1.06	88.31	1.05	89.49	1.05	90.68	1.04	91.86	1.05	93.05	1.04	69
70	87.00	1.05	88.18	1.04	89.36	1.04	90.54	1.04	91.72	1.04	92.91	1.04	94.09	1.04	70
71	88.05	1.04	89.22	1.05	90.40	1.04	91.58	1.04	92.76	1.04	93.95	1.03	95.13	1.03	71
72	89.09	1.04	90.27	1.03	91.44	1.03	92.62	1.03	93.80	1.02	94.98	1.02	96.16	1.02	72
73	90.13	1.03	91.30	1.03	92.47	1.03	93.65	1.02	94.82	1.02	96.00	1.02	97.18	1.01	73
74	91.16	1.03	92.33	1.02	93.50	1.02	94.67	1.02	95.84	1.02	97.02	1.01	98.19	1.00	74
75	92.19	1.02	93.35	1.02	94.52	1.02	95.69	1.01	96.86	1.00	98.03	1.00	99.19	1.00	75
76	93.21	1.01	94.37	1.01	95.54	1.00	96.70	1.00	97.86	1.00	99.03	0.99	100.19	0.98	76
77	94.22	1.01	95.38	1.01	96.54	1.01	97.70	1.00	98.86	0.99	100.02	0.99	101.17	0.98	77
78	95.23	1.00	96.39	1.00	97.55	0.99	98.70	0.99	99.85	0.99	101.01	0.98	102.15	0.98	78
79	96.23	1.00	97.39	0.99	98.54	0.99	99.69	0.99	100.84	0.98	101.99	0.97	103.13	0.96	79
80	97.23	1.00	98.38	0.99	99.53	0.98	100.68	0.98	101.82	0.97	102.96	0.97	104.09	0.96	80
81	98.23	0.98	99.37	0.98	100.51	0.98	101.66	0.97	102.79	0.97	103.93	0.96	105.05	0.96	81
82	99.21	0.99	100.35	0.98	101.49	0.98	102.63	0.96	103.76	0.96	104.89	0.95	106.01	0.94	82
83	100.20	0.97	101.33	0.97	102.47	0.96	103.59	0.96	104.72	0.95	105.84	0.95	106.95	0.94	83
84	101.17	0.98	102.30	0.97	103.43	0.96	104.55	0.96	105.67	0.95	106.79	0.94	107.89	0.93	84
85	102.15	0.97	103.27	0.96	104.39	0.96	105.51	0.95	106.62	0.94	107.73	0.93	108.82	0.93	85
86	103.12	0.96	104.23	0.96	105.35	0.95	106.46	0.94	107.56	0.94	108.66	0.93	109.75	0.92	86
87	104.08	0.96	105.19	0.95	106.30	0.94	107.40	0.94	108.50	0.93	109.59	0.92	110.67	0.92	87
88	105.04	0.95	106.14	0.95	107.24	0.94	108.34	0.93	109.43	0.92	110.51	0.92	111.59	0.91	88
89	105.99	0.95	107.09	0.94	108.18	0.94	109.27	0.93	110.35	0.92	111.43	0.91	112.50	0.90	89
90	106.94	0.94	108.03	0.94	109.12	0.93	110.20	0.92	111.27	0.92	112.34	0.90	113.40	0.89	90
91	107.88	0.94	108.97	0.93	110.05	0.92	111.12	0.92	112.19	0.90	113.24	0.90	114.29	0.89	91
92	108.82	0.94	109.90	0.93	110.97	0.92	112.04	0.91	113.09	0.91	114.14	0.90	115.18	0.89	92
93	109.76	0.93	110.83	0.92	111.89	0.92	112.95	0.90	114.00	0.89	115.04	0.89	116.07	0.88	93
94	110.69	0.92	111.75	0.92	112.81	0.91	113.85	0.90	114.89	0.90	115.93	0.88	116.95	0.87	94
95	111.61	0.92	112.67	0.91	113.72	0.90	114.75	0.90	115.79	0.88	116.81	0.88	117.82	0.87	95
96	112.53	0.92	113.58	0.91	114.62	0.90	115.65	0.89	116.67	0.88	117.69	0.87	118.69	0.86	96
97	113.45	0.91	114.49	0.90	115.52	0.89	116.54	0.89	117.55	0.88	118.56	0.86	119.55	0.86	97
98	114.36	0.91	115.39	0.90	116.41	0.89	117.43	0.88	118.43	0.87	119.42	0.87	120.41	0.85	98
99	115.27	0.91	116.29	0.90	117.30	0.89	118.31	0.88	119.30	0.87	120.29	0.85	121.26	0.85	99
100	116.18	0.90	117.19	0.89	118.19	0.88	119.19	0.87	120.17	0.86	121.14	0.86	122.11	0.84	100
101	117.08	0.89	118.08	0.89	119.07	0.88	120.06	0.86	121.03	0.86	122.00	0.84	122.95	0.84	101
102	117.97	0.90	118.97	0.88	119.95	0.87	120.92	0.87	121.89	0.85	122.84	0.84	123.79	0.83	102
103	118.87	0.88	119.85	0.88	120.82	0.87	121.79	0.86	122.74	0.85	123.68	0.84	124.62	0.83	103
104	119.75	0.89	120.73	0.87	121.69	0.87	122.65	0.85	123.59	0.84	124.52	0.84	125.45	0.82	104
105	120.64	0.88	121.60	0.87	122.56	0.86	123.50	0.85	124.43	0.84	125.36	0.83	126.27	0.82	105
106	121.52	0.88	122.47	0.87	123.42	0.85	124.35	0.85	125.27	0.84	126.19	0.82	127.09	0.81	106
107	122.40	0.87	123.34	0.86	124.27	0.86	125.20	0.84	126.11	0.83	127.01	0.82	127.90	0.81	107
108	123.27	0.87	124.20	0.86	125.13	0.84	126.04	0.84	126.94	0.83	127.83	0.82	128.71	0.81	108
109	124.14	0.87	125.06	0.86	125.97	0.85	126.88	0.83	127.77	0.82	128.65	0.81	129.52	0.80	109
110	125.01	0.86	125.92	0.85	126.82	0.84	127.71	0.83	128.59	0.82	129.46	0.81	130.32	0.80	110
111	125.87	0.86	126.77	0.85	127.66	0.84	128.54	0.83	129.41	0.82	130.27	0.80	131.12	0.79	111
112	126.73	0.85	127.62	0.84	128.50	0.83	129.37	0.82	130.23	0.81	131.07	0.80	131.91	0.79	112
113	127.58	0.85	128.46	0.84	129.33	0.83	130.19	0.82	131.04	0.80	131.87	0.80	132.70	0.78	113
114	128.43	0.85	129.30	0.84	130.16	0.83	131.01	0.81	131.84	0.81	132.67	0.79	133.48	0.78	114
115	129.28	0.85	130.14	0.84	130.99	0.82	131.82	0.81	132.65	0.80	133.46	0.79	134.26	0.78	115
116	130.13	0.84	130.98	0.83	131.81	0.82	132.63	0.81	133.45	0.80	134.25	0.79	135.04	0.77	116
117	130.97	0.84	131.81	0.83	132.63	0.82	133.44	0.81	134.25	0.79	135.04	0.78	135.81	0.77	117
118	131.81	0.84	132.64	0.82	133.45	0.81	134.25	0.80	135.04	0.79	135.82	0.78	136.58	0.77	118
119	132.65	0.83	133.46	0.82	134.26	0.81	135.05	0.80	135.83	0.79	136.60	0.77	137.35	0.76	119
120	133.48		134.28		135.07		135.85		136.62		137.37		138.11		120

M	$e = .15$		$e = .16$		$e = .17$		$e = .18$		$e = .19$		$e = .20$		$e = .21$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	133.48	0.83	134.28	0.82	135.07	0.81	135.85	0.79	136.62	0.78	137.37	0.77	138.11	0.76	120°
121	134.31	0.83	135.10	0.82	135.88	0.80	136.64	0.80	137.40	0.78	138.14	0.77	138.87	0.76	121
122	135.14	0.83	135.92	0.81	136.68	0.80	137.44	0.79	138.18	0.77	138.91	0.77	139.63	0.75	122
123	135.97	0.82	136.73	0.81	137.48	0.80	138.23	0.78	138.95	0.78	139.68	0.76	140.38	0.75	123
124	136.79	0.82	137.54	0.81	138.28	0.80	139.01	0.78	139.73	0.77	140.44	0.76	141.13	0.75	124
125	137.61	0.81	138.35	0.80	139.08	0.79	139.79	0.78	140.50	0.77	141.20	0.75	141.88	0.75	125
126	138.42	0.82	139.15	0.81	139.87	0.79	140.57	0.78	141.27	0.76	141.95	0.76	142.63	0.74	126
127	139.24	0.81	139.96	0.79	140.66	0.79	141.35	0.78	142.03	0.77	142.71	0.75	143.37	0.73	127
128	140.05	0.81	140.75	0.80	141.45	0.78	142.13	0.77	142.80	0.76	143.46	0.74	144.10	0.74	128
129	140.86	0.81	141.55	0.79	142.23	0.78	142.90	0.77	143.56	0.75	144.20	0.75	144.84	0.73	129
130	141.67	0.80	142.34	0.80	143.01	0.78	143.67	0.77	144.31	0.76	144.95	0.74	145.57	0.73	130
131	142.47	0.80	143.14	0.79	143.79	0.78	144.44	0.76	145.07	0.75	145.69	0.74	146.30	0.73	131
132	143.27	0.80	143.93	0.78	144.57	0.77	145.20	0.76	145.82	0.75	146.43	0.74	147.03	0.72	132
133	144.07	0.80	144.71	0.79	145.34	0.77	145.96	0.76	146.57	0.75	147.17	0.73	147.75	0.73	133
134	144.87	0.80	145.50	0.78	146.11	0.77	146.72	0.76	147.32	0.74	147.90	0.73	148.48	0.72	134
135	145.67	0.79	146.28	0.78	146.88	0.77	147.48	0.75	148.06	0.74	148.63	0.73	149.20	0.71	135
136	146.46	0.79	147.06	0.78	147.65	0.77	148.23	0.75	148.80	0.74	149.36	0.73	149.91	0.72	136
137	147.25	0.79	147.84	0.77	148.42	0.76	148.98	0.76	149.54	0.74	150.09	0.73	150.63	0.71	137
138	148.04	0.79	148.61	0.77	149.18	0.76	149.74	0.74	150.28	0.74	150.82	0.72	151.34	0.72	138
139	148.83	0.78	149.38	0.78	149.94	0.76	150.48	0.75	151.02	0.73	151.54	0.72	152.06	0.70	139
140	149.61	0.78	150.16	0.77	150.70	0.76	151.23	0.74	151.75	0.73	152.26	0.72	152.76	0.71	140
141	150.39	0.79	150.93	0.77	151.46	0.75	151.97	0.75	152.48	0.73	152.98	0.72	153.47	0.70	141
142	151.18	0.78	151.70	0.77	152.21	0.76	152.72	0.74	153.21	0.73	153.70	0.71	154.17	0.71	142
143	151.96	0.77	152.47	0.76	152.97	0.75	153.46	0.74	153.94	0.73	154.41	0.72	154.88	0.70	143
144	152.73	0.78	153.23	0.76	153.72	0.75	154.20	0.73	154.67	0.72	155.13	0.71	155.58	0.70	144
145	153.51	0.78	153.99	0.77	154.47	0.75	154.93	0.74	155.39	0.72	155.84	0.71	156.28	0.69	145
146	154.29	0.77	154.76	0.75	155.22	0.74	155.67	0.73	156.11	0.72	156.55	0.71	156.97	0.70	146
147	155.06	0.77	155.51	0.76	155.96	0.75	156.40	0.73	156.83	0.72	157.26	0.70	157.67	0.69	147
148	155.83	0.77	156.27	0.76	156.71	0.74	157.13	0.73	157.55	0.72	157.96	0.71	158.36	0.70	148
149	156.60	0.77	157.03	0.75	157.45	0.74	157.86	0.73	158.27	0.72	158.67	0.70	159.06	0.69	149
150	157.37	0.77	157.78	0.76	158.19	0.74	158.59	0.73	158.99	0.71	159.37	0.70	159.75	0.69	150
151	158.14	0.76	158.54	0.75	158.93	0.74	159.32	0.73	159.70	0.71	160.07	0.70	160.44	0.68	151
152	158.90	0.77	159.29	0.75	159.67	0.74	160.05	0.72	160.41	0.71	160.77	0.70	161.12	0.69	152
153	159.67	0.76	160.04	0.75	160.41	0.74	160.77	0.72	161.12	0.71	161.47	0.70	161.81	0.69	153
154	160.43	0.76	160.79	0.75	161.15	0.74	161.49	0.72	161.83	0.71	162.17	0.70	162.50	0.68	154
155	161.19	0.76	161.54	0.75	161.88	0.74	162.21	0.73	162.54	0.71	162.86	0.70	163.18	0.68	155
156	161.95	0.76	162.29	0.74	162.62	0.73	162.94	0.72	163.25	0.71	163.56	0.69	163.86	0.68	156
157	162.71	0.76	163.03	0.75	163.35	0.73	163.66	0.71	163.96	0.70	164.25	0.70	164.54	0.68	157
158	163.47	0.76	163.78	0.74	164.08	0.73	164.37	0.72	164.66	0.71	164.95	0.69	165.22	0.68	158
159	164.23	0.76	164.52	0.75	164.81	0.73	165.09	0.72	165.37	0.70	165.64	0.69	165.90	0.68	159
160	164.99	0.75	165.27	0.74	165.54	0.73	165.81	0.71	166.07	0.70	166.33	0.69	166.58	0.68	160
161	165.74	0.76	166.01	0.74	166.27	0.73	166.52	0.71	166.77	0.70	167.02	0.69	167.26	0.67	161
162	166.50	0.75	166.75	0.74	167.00	0.72	167.23	0.72	167.47	0.70	167.71	0.68	167.93	0.68	162
163	167.25	0.76	167.49	0.74	167.72	0.73	167.95	0.71	168.17	0.70	168.39	0.69	168.61	0.67	163
164	168.01	0.75	168.23	0.74	168.45	0.73	168.66	0.72	168.87	0.70	169.08	0.69	169.28	0.68	164
165	168.76	0.75	168.97	0.74	169.18	0.72	169.38	0.71	169.57	0.70	169.77	0.68	169.96	0.67	165
166	169.51	0.75	169.71	0.74	169.90	0.72	170.09	0.71	170.27	0.70	170.45	0.69	170.63	0.67	166
167	170.26	0.76	170.45	0.73	170.62	0.73	170.80	0.71	170.97	0.70	171.14	0.68	171.30	0.67	167
168	171.02	0.75	171.18	0.74	171.35	0.72	171.51	0.71	171.67	0.69	171.82	0.68	171.97	0.67	168
169	171.77	0.75	171.92	0.74	172.07	0.72	172.22	0.71	172.36	0.70	172.50	0.69	172.64	0.67	169
170	172.52	0.75	172.66	0.73	172.79	0.73	172.93	0.71	173.06	0.69	173.19	0.68	173.31	0.67	170
171	173.27	0.75	173.39	0.74	173.52	0.72	173.64	0.71	173.75	0.70	173.87	0.68	173.98	0.67	171
172	174.02	0.74	174.13	0.73	174.24	0.72	174.35	0.70	174.45	0.69	174.55	0.68	174.65	0.67	172
173	174.76	0.75	174.86	0.74	174.96	0.72	175.05	0.71	175.14	0.70	175.23	0.69	175.32	0.67	173
174	175.51	0.75	175.60	0.73	175.68	0.72	175.76	0.71	175.84	0.69	175.92	0.68	175.99	0.67	174
175	176.26	0.75	176.33	0.74	176.40	0.72	176.47	0.70	176.53	0.70	176.60	0.68	176.66	0.67	175
176	177.01	0.75	177.07	0.73	177.12	0.72	177.17	0.71	177.23	0.69	177.28	0.68	177.33	0.67	176
177	177.76	0.74	177.80	0.73	177.84	0.72	177.88	0.71	177.92	0.69	177.96	0.68	178.00	0.66	177
178	178.50	0.75	178.53	0.74	178.56	0.72	178.59	0.70	178.61	0.70	178.64	0.68	178.66	0.67	178
179	179.25	0.75	179.27	0.73	179.28	0.72	179.29	0.71	179.31	0.69	179.32	0.68	179.33	0.67	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .22$		$e = .23$		$e = .24$		$e = .25$		$e = .26$		$e = .27$		$e = .28$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
0	0.00	1.60	0.00	1.64	0.00	1.68	0.00	1.72	0.00	1.76	0.00	1.81	0.00	1.85	0
1	1.60	1.61	1.64	1.64	1.68	1.68	1.72	1.72	1.76	1.77	1.81	1.80	1.85	1.85	1
2	3.21	1.60	3.28	1.64	3.36	1.68	3.44	1.72	3.53	1.76	3.61	1.81	3.70	1.85	2
3	4.81	1.60	4.92	1.64	5.04	1.68	5.16	1.72	5.29	1.76	5.42	1.80	5.55	1.85	3
4	6.41	1.60	6.56	1.64	6.72	1.67	6.88	1.71	7.05	1.75	7.22	1.80	7.40	1.84	4
5	8.01	1.59	8.20	1.63	8.39	1.67	8.59	1.71	8.80	1.75	9.02	1.79	9.24	1.84	5
6	9.60	1.60	9.83	1.63	10.06	1.67	10.30	1.71	10.55	1.75	10.81	1.79	11.08	1.84	6
7	11.20	1.59	11.46	1.63	11.73	1.67	12.01	1.71	12.30	1.75	12.60	1.79	12.91	1.83	7
8	12.79	1.59	13.09	1.63	13.40	1.66	13.72	1.70	14.05	1.74	14.39	1.79	14.74	1.83	8
9	14.38	1.58	14.71	1.62	15.06	1.66	15.42	1.69	15.79	1.73	16.17	1.78	16.57	1.83	9
10	15.96	1.58	16.33	1.62	16.72	1.65	17.11	1.69	17.52	1.73	17.94	1.77	18.38	1.81	10
11	17.54	1.57	17.95	1.60	18.37	1.64	18.80	1.68	19.25	1.72	19.71	1.76	20.19	1.79	11
12	19.11	1.57	19.55	1.61	20.01	1.64	20.48	1.67	20.97	1.71	21.47	1.75	21.98	1.79	12
13	20.68	1.57	21.16	1.60	21.65	1.63	22.15	1.67	22.68	1.70	23.22	1.74	23.77	1.78	13
14	22.25	1.55	22.76	1.59	23.28	1.62	23.82	1.66	24.38	1.70	24.96	1.73	25.55	1.77	14
15	23.80	1.55	24.35	1.58	24.90	1.62	25.48	1.65	26.08	1.68	26.69	1.72	27.32	1.76	15
16	25.35	1.55	25.93	1.58	26.52	1.61	27.13	1.64	27.76	1.68	28.41	1.71	29.08	1.74	16
17	26.90	1.54	27.51	1.57	28.13	1.60	28.77	1.64	29.44	1.66	30.12	1.70	30.82	1.74	17
18	28.44	1.53	29.08	1.56	29.73	1.59	30.41	1.62	31.10	1.66	31.82	1.69	32.56	1.72	18
19	29.97	1.52	30.64	1.55	31.32	1.59	32.03	1.61	32.76	1.64	33.51	1.67	34.28	1.70	19
20	31.49	1.52	32.19	1.54	32.91	1.57	33.64	1.60	34.40	1.63	35.18	1.67	35.98	1.70	20
21	33.01	1.50	33.73	1.54	34.48	1.56	35.24	1.60	36.03	1.63	36.85	1.65	37.68	1.68	21
22	34.51	1.50	35.27	1.52	36.04	1.56	36.84	1.58	37.66	1.61	38.50	1.63	39.36	1.66	22
23	36.01	1.49	36.79	1.52	37.60	1.54	38.42	1.57	39.27	1.59	40.13	1.63	41.02	1.65	23
24	37.50	1.48	38.31	1.51	39.14	1.53	39.99	1.56	40.86	1.58	41.76	1.61	42.67	1.64	24
25	38.98	1.48	39.82	1.50	40.67	1.52	41.55	1.54	42.44	1.57	43.37	1.59	44.31	1.62	25
26	40.46	1.46	41.32	1.48	42.19	1.51	43.09	1.54	44.01	1.56	44.96	1.58	45.93	1.61	26
27	41.92	1.45	42.80	1.48	43.70	1.50	44.63	1.52	45.57	1.55	46.54	1.57	47.54	1.59	27
28	43.37	1.45	44.28	1.47	45.20	1.49	46.15	1.51	47.12	1.53	48.11	1.55	49.13	1.57	28
29	44.82	1.43	45.75	1.45	46.69	1.48	47.66	1.50	48.65	1.52	49.66	1.54	50.70	1.56	29
30	46.25	1.43	47.20	1.45	48.17	1.46	49.16	1.48	50.17	1.50	51.20	1.53	52.26	1.54	30
31	47.68	1.41	48.65	1.43	49.63	1.46	50.64	1.47	51.67	1.49	52.73	1.51	53.80	1.53	31
32	49.09	1.41	50.08	1.42	51.09	1.44	52.11	1.46	53.16	1.48	54.24	1.49	55.33	1.51	32
33	50.50	1.39	51.50	1.41	52.53	1.43	53.57	1.45	54.64	1.46	55.73	1.48	56.84	1.49	33
34	51.89	1.39	52.91	1.41	53.96	1.42	55.02	1.43	56.10	1.45	57.21	1.46	58.33	1.49	34
35	53.28	1.37	54.32	1.39	55.38	1.40	56.45	1.42	57.55	1.44	58.67	1.45	59.82	1.46	35
36	54.65	1.36	55.71	1.38	56.78	1.39	57.87	1.41	58.99	1.42	60.12	1.44	61.28	1.44	36
37	56.01	1.36	57.09	1.36	58.17	1.39	59.28	1.40	60.41	1.41	61.56	1.42	62.72	1.43	37
38	57.37	1.34	58.45	1.36	59.56	1.37	60.68	1.38	61.82	1.39	62.98	1.40	64.15	1.42	38
39	58.71	1.33	59.81	1.34	60.93	1.35	62.06	1.37	63.21	1.38	64.38	1.39	65.57	1.40	39
40	60.04	1.33	61.15	1.34	62.28	1.35	63.43	1.35	64.59	1.37	65.77	1.38	66.97	1.38	40
41	61.37	1.31	62.49	1.32	63.63	1.33	64.78	1.34	65.96	1.35	67.15	1.36	68.35	1.37	41
42	62.68	1.30	63.81	1.31	64.96	1.32	66.12	1.33	67.31	1.33	68.51	1.34	69.72	1.35	42
43	63.98	1.29	65.12	1.30	66.28	1.31	67.45	1.32	68.64	1.33	69.85	1.33	71.07	1.34	43
44	65.27	1.28	66.42	1.29	67.59	1.29	68.77	1.30	69.97	1.31	71.18	1.32	72.41	1.32	44
45	66.55	1.27	67.71	1.27	68.88	1.29	70.07	1.29	71.28	1.30	72.50	1.30	73.73	1.31	45
46	67.82	1.25	68.98	1.27	70.17	1.27	71.36	1.28	72.58	1.28	73.80	1.29	75.04	1.29	46
47	69.07	1.25	70.25	1.25	71.44	1.26	72.64	1.27	73.86	1.27	75.09	1.27	76.33	1.28	47
48	70.32	1.24	71.50	1.25	72.70	1.25	73.91	1.25	75.13	1.26	76.36	1.26	77.61	1.26	48
49	71.56	1.23	72.75	1.23	73.95	1.24	75.16	1.24	76.39	1.24	77.62	1.25	78.87	1.25	49
50	72.79	1.21	73.98	1.22	75.19	1.22	76.40	1.23	77.63	1.23	78.87	1.23	80.12	1.23	50
51	74.00	1.21	75.20	1.21	76.41	1.22	77.63	1.22	78.86	1.22	80.10	1.22	81.35	1.22	51
52	75.21	1.20	76.41	1.20	77.63	1.20	78.85	1.20	80.08	1.21	81.32	1.21	82.57	1.21	52
53	76.41	1.18	77.61	1.19	78.83	1.19	80.05	1.20	81.29	1.19	82.53	1.20	83.78	1.19	53
54	77.59	1.18	78.80	1.18	80.02	1.18	81.25	1.18	82.48	1.18	83.73	1.18	84.97	1.18	54
55	78.77	1.16	79.98	1.17	81.20	1.17	82.43	1.17	83.66	1.17	84.91	1.16	86.15	1.17	55
56	79.93	1.16	81.15	1.16	82.37	1.16	83.60	1.15	84.83	1.16	86.07	1.16	87.32	1.16	56
57	81.09	1.15	82.31	1.15	83.53	1.15	84.75	1.15	85.99	1.15	87.23	1.14	88.48	1.14	57
58	82.24	1.14	83.46	1.13	84.68	1.13	85.90	1.14	87.14	1.13	88.37	1.13	89.62	1.12	58
59	83.38	1.13	84.59	1.13	85.81	1.13	87.04	1.12	88.27	1.12	89.50	1.12	90.74	1.12	59
60	84.51		85.72		86.94		88.16		89.39		90.62		91.86		60

M	$e = .22$		$e = .23$		$e = .24$		$e = .25$		$e = .26$		$e = .27$		$e = .28$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60°	84.51	1.11	85.72	1.12	86.94	1.11	88.16	1.12	89.39	1.11	90.62	1.11	91.86	1.10	60°
61	85.62	1.11	86.84	1.11	88.05	1.11	89.28	1.10	90.50	1.10	91.73	1.10	92.96	1.10	61
62	86.73	1.10	87.95	1.09	89.16	1.10	90.38	1.09	91.60	1.09	92.83	1.08	94.06	1.08	62
63	87.83	1.09	89.04	1.09	90.26	1.08	91.47	1.08	92.69	1.08	93.91	1.08	95.14	1.06	63
64	88.92	1.08	90.13	1.08	91.34	1.08	92.55	1.08	93.77	1.07	94.99	1.06	96.20	1.06	64
65	90.00	1.07	91.21	1.07	92.42	1.06	93.63	1.06	94.84	1.06	96.05	1.05	97.26	1.05	65
66	91.07	1.07	92.28	1.06	93.48	1.06	94.69	1.05	95.90	1.04	97.10	1.04	98.31	1.03	66
67	92.14	1.06	93.34	1.05	94.54	1.05	95.74	1.04	96.94	1.04	98.14	1.03	99.34	1.03	67
68	93.20	1.04	94.39	1.04	95.59	1.04	96.78	1.04	97.98	1.03	99.17	1.02	100.37	1.01	68
69	94.24	1.04	95.43	1.04	96.63	1.03	97.82	1.02	99.01	1.01	100.19	1.02	101.38	1.01	69
70	95.28	1.03	96.47	1.02	97.66	1.02	98.84	1.01	100.02	1.01	101.21	1.00	102.39	0.99	70
71	96.31	1.02	97.49	1.02	98.68	1.01	99.85	1.01	101.03	1.00	102.21	0.99	103.38	0.98	71
72	97.33	1.02	98.51	1.01	99.69	1.00	100.86	1.00	102.03	0.99	103.20	0.98	104.36	0.98	72
73	98.35	1.00	99.52	1.00	100.69	0.99	101.86	0.98	103.02	0.98	104.18	0.97	105.34	0.96	73
74	99.35	1.00	100.52	0.99	101.68	0.99	102.84	0.98	104.00	0.97	105.15	0.97	106.30	0.96	74
75	100.35	0.99	101.51	0.98	102.67	0.97	103.82	0.97	104.97	0.96	106.12	0.95	107.26	0.94	75
76	101.34	0.98	102.49	0.98	103.64	0.97	104.79	0.96	105.93	0.95	107.07	0.94	108.20	0.94	76
77	102.32	0.98	103.47	0.97	104.61	0.96	105.75	0.95	106.88	0.95	108.01	0.94	109.14	0.92	77
78	103.30	0.96	104.44	0.96	105.57	0.96	106.70	0.95	107.83	0.94	108.95	0.93	110.06	0.92	78
79	104.26	0.96	105.40	0.95	106.53	0.94	107.65	0.94	108.77	0.93	109.88	0.92	110.98	0.92	79
80	105.22	0.96	106.35	0.95	107.47	0.94	108.59	0.93	109.70	0.92	110.80	0.91	111.90	0.90	80
81	106.18	0.94	107.30	0.94	108.41	0.93	109.52	0.92	110.62	0.91	111.71	0.90	112.80	0.89	81
82	107.12	0.94	108.24	0.93	109.34	0.92	110.44	0.91	111.53	0.90	112.61	0.90	113.69	0.89	82
83	108.06	0.93	109.17	0.92	110.26	0.92	111.35	0.91	112.43	0.90	113.51	0.89	114.58	0.88	83
84	108.99	0.93	110.09	0.92	111.18	0.90	112.26	0.90	113.33	0.89	114.40	0.88	115.46	0.87	84
85	109.92	0.92	111.01	0.91	112.08	0.91	113.16	0.89	114.22	0.88	115.28	0.87	116.33	0.86	85
86	110.84	0.91	111.92	0.90	112.99	0.89	114.05	0.88	115.10	0.88	116.15	0.87	117.19	0.86	86
87	111.75	0.90	112.82	0.90	113.88	0.88	114.93	0.88	115.98	0.87	117.02	0.86	118.05	0.85	87
88	112.65	0.90	113.72	0.89	114.77	0.88	115.81	0.87	116.85	0.86	117.88	0.85	118.90	0.84	88
89	113.55	0.90	114.61	0.88	115.65	0.87	116.68	0.87	117.71	0.86	118.73	0.84	119.74	0.83	89
90	114.45	0.88	115.49	0.88	116.52	0.87	117.55	0.86	118.57	0.85	119.57	0.84	120.57	0.83	90
91	115.33	0.88	116.37	0.87	117.39	0.86	118.41	0.85	119.42	0.84	120.41	0.83	121.40	0.82	91
92	116.21	0.88	117.24	0.86	118.25	0.86	119.26	0.84	120.26	0.83	121.24	0.83	122.22	0.82	92
93	117.09	0.87	118.10	0.86	119.11	0.85	120.10	0.84	121.09	0.83	122.07	0.82	123.04	0.81	93
94	117.96	0.86	118.96	0.86	119.96	0.84	120.94	0.84	121.92	0.82	122.89	0.81	123.85	0.80	94
95	118.82	0.86	119.82	0.85	120.80	0.84	121.78	0.83	122.74	0.82	123.70	0.81	124.65	0.79	95
96	119.68	0.85	120.67	0.84	121.64	0.83	122.61	0.82	123.56	0.81	124.51	0.80	125.44	0.79	96
97	120.53	0.85	121.51	0.84	122.47	0.83	123.43	0.81	124.37	0.81	125.31	0.79	126.23	0.79	97
98	121.38	0.84	122.35	0.83	123.30	0.82	124.24	0.81	125.18	0.80	126.10	0.79	127.02	0.78	98
99	122.22	0.84	123.18	0.82	124.12	0.82	125.05	0.81	125.98	0.79	126.89	0.79	127.80	0.77	99
100	123.06	0.83	124.00	0.83	124.94	0.81	125.86	0.80	126.77	0.79	127.68	0.77	128.57	0.77	100
101	123.89	0.83	124.83	0.81	125.75	0.80	126.66	0.80	127.56	0.79	128.45	0.78	129.34	0.76	101
102	124.72	0.82	125.64	0.81	126.55	0.80	127.46	0.79	128.35	0.78	129.23	0.77	130.10	0.76	102
103	125.54	0.82	126.45	0.81	127.35	0.80	128.25	0.78	129.13	0.77	130.00	0.76	130.86	0.75	103
104	126.36	0.81	127.26	0.80	128.15	0.79	129.03	0.78	129.90	0.77	130.76	0.75	131.61	0.74	104
105	127.17	0.81	128.06	0.80	128.94	0.79	129.81	0.77	130.67	0.76	131.51	0.76	132.35	0.75	105
106	127.98	0.80	128.86	0.79	129.73	0.78	130.58	0.77	131.43	0.76	132.27	0.75	133.10	0.73	106
107	128.78	0.80	129.65	0.79	130.51	0.77	131.35	0.77	132.19	0.75	133.02	0.74	133.83	0.73	107
108	129.58	0.79	130.44	0.78	131.28	0.78	132.12	0.76	132.94	0.75	133.76	0.74	134.56	0.73	108
109	130.37	0.79	131.22	0.78	132.06	0.76	132.88	0.76	133.69	0.75	134.50	0.73	135.29	0.72	109
110	131.16	0.79	132.00	0.77	132.82	0.77	133.64	0.75	134.44	0.74	135.23	0.73	136.01	0.72	110
111	131.95	0.78	132.77	0.77	133.59	0.76	134.39	0.75	135.18	0.74	135.96	0.73	136.73	0.72	111
112	132.73	0.78	133.54	0.77	134.35	0.75	135.14	0.74	135.92	0.73	136.69	0.72	137.45	0.71	112
113	133.51	0.77	134.31	0.76	135.10	0.75	135.88	0.74	136.65	0.73	137.41	0.72	138.16	0.70	113
114	134.28	0.77	135.07	0.76	135.85	0.75	136.62	0.74	137.38	0.72	138.13	0.71	138.86	0.70	114
115	135.05	0.77	135.83	0.76	136.60	0.74	137.36	0.73	138.10	0.72	138.84	0.71	138.56	0.70	115
116	135.82	0.76	136.59	0.75	137.34	0.74	138.09	0.73	138.82	0.72	139.55	0.70	140.26	0.70	116
117	136.58	0.76	137.34	0.74	138.08	0.74	138.82	0.72	139.54	0.71	140.25	0.70	140.96	0.69	117
118	137.34	0.75	138.08	0.75	138.82	0.73	139.54	0.72	140.25	0.71	140.95	0.70	141.65	0.68	118
119	138.09	0.76	138.83	0.74	139.55	0.73	140.26	0.72	140.96	0.71	141.65	0.70	142.33	0.69	119
120	138.85		139.57		140.28		140.98		141.67		142.35		143.02		120

M	$e = .22$		$e = .23$		$e = .24$		$e = .25$		$e = .26$		$e = .27$		$e = .28$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	138.85	0.74	139.57	0.73	140.28	0.72	140.98	0.71	141.67	0.70	142.35	0.69	143.02	0.68	120°
121	139.59	0.75	140.30	0.74	141.00	0.72	141.69	0.71	142.37	0.70	143.04	0.68	143.70	0.67	121
122	140.34	0.74	141.04	0.73	141.72	0.72	142.40	0.71	143.07	0.69	143.72	0.69	144.37	0.67	122
123	141.08	0.74	141.77	0.72	142.44	0.72	143.11	0.70	143.76	0.69	144.41	0.68	145.04	0.67	123
124	141.82	0.73	142.49	0.73	143.16	0.71	143.81	0.70	144.45	0.69	145.09	0.68	145.71	0.67	124
125	142.55	0.74	143.22	0.72	143.87	0.71	144.51	0.70	145.14	0.69	145.77	0.67	146.38	0.66	125
126	143.29	0.73	143.94	0.72	144.58	0.70	145.21	0.69	145.83	0.68	146.44	0.67	147.04	0.66	126
127	144.02	0.72	144.66	0.71	145.28	0.71	145.90	0.69	146.51	0.68	147.11	0.67	147.70	0.66	127
128	144.74	0.73	145.37	0.71	145.99	0.70	146.59	0.69	147.19	0.68	147.78	0.67	148.36	0.66	128
129	145.47	0.72	146.08	0.71	146.69	0.69	147.28	0.69	147.87	0.67	148.45	0.66	149.02	0.65	129
130	146.19	0.72	146.79	0.71	147.38	0.70	147.97	0.68	148.54	0.68	149.11	0.66	149.67	0.65	130
131	146.91	0.71	147.50	0.70	148.08	0.69	148.65	0.68	149.22	0.66	149.77	0.66	150.32	0.64	131
132	147.62	0.71	148.20	0.70	148.77	0.69	149.33	0.68	149.88	0.67	150.43	0.65	150.96	0.64	132
133	148.33	0.71	148.90	0.70	149.46	0.69	150.01	0.67	150.55	0.66	151.08	0.65	151.60	0.64	133
134	149.04	0.71	149.60	0.70	150.15	0.68	150.68	0.68	151.21	0.66	151.73	0.65	152.24	0.64	134
135	149.75	0.71	150.30	0.69	150.83	0.68	151.36	0.67	151.87	0.66	152.38	0.65	152.88	0.64	135
136	150.46	0.70	150.99	0.69	151.51	0.68	152.03	0.66	152.53	0.66	153.03	0.65	153.52	0.63	136
137	151.16	0.70	151.68	0.69	152.19	0.68	152.69	0.67	153.19	0.65	153.68	0.64	154.15	0.63	137
138	151.86	0.70	152.37	0.69	152.87	0.67	153.36	0.66	153.84	0.65	154.32	0.64	154.78	0.63	138
139	152.56	0.70	153.06	0.68	153.54	0.68	154.02	0.66	154.49	0.65	154.96	0.64	155.41	0.63	139
140	153.26	0.69	153.74	0.68	154.22	0.67	154.68	0.66	155.14	0.65	155.60	0.63	156.04	0.63	140
141	153.95	0.69	154.42	0.68	154.89	0.67	155.34	0.66	155.79	0.65	156.23	0.64	156.67	0.62	141
142	154.64	0.69	155.10	0.68	155.56	0.66	156.00	0.65	156.44	0.64	156.87	0.63	157.29	0.62	142
143	155.33	0.69	155.78	0.68	156.22	0.67	156.65	0.66	157.08	0.64	157.50	0.63	157.91	0.62	143
144	156.02	0.69	156.46	0.67	156.89	0.66	157.31	0.65	157.72	0.64	158.13	0.63	158.53	0.61	144
145	156.71	0.68	157.13	0.68	157.55	0.66	157.96	0.65	158.36	0.64	158.76	0.62	159.14	0.62	145
146	157.39	0.69	157.81	0.67	158.21	0.66	158.61	0.65	159.00	0.64	159.38	0.63	159.76	0.61	146
147	158.08	0.68	158.48	0.67	158.87	0.66	159.26	0.64	159.64	0.63	160.01	0.62	160.37	0.61	147
148	158.76	0.68	159.15	0.67	159.53	0.65	159.90	0.65	160.27	0.63	160.63	0.62	160.98	0.61	148
149	159.44	0.68	159.82	0.66	160.18	0.66	160.55	0.64	160.90	0.63	161.25	0.62	161.59	0.61	149
150	160.12	0.67	160.48	0.67	160.84	0.65	161.19	0.64	161.53	0.63	161.87	0.62	162.20	0.61	150
151	160.79	0.68	161.15	0.66	161.49	0.65	161.83	0.64	162.16	0.63	162.49	0.62	162.81	0.61	151
152	161.47	0.67	161.81	0.66	162.14	0.65	162.47	0.64	162.79	0.63	163.11	0.61	163.42	0.60	152
153	162.14	0.68	162.47	0.66	162.79	0.65	163.11	0.64	163.42	0.62	163.72	0.62	164.02	0.60	153
154	162.82	0.67	163.13	0.66	163.44	0.65	163.75	0.63	164.04	0.63	164.34	0.61	164.62	0.61	154
155	163.49	0.67	163.79	0.66	164.09	0.65	164.38	0.64	164.67	0.62	164.95	0.61	165.23	0.60	155
156	164.16	0.67	164.45	0.66	164.74	0.64	165.02	0.63	165.29	0.62	165.56	0.61	165.83	0.60	156
157	164.83	0.66	165.11	0.65	165.38	0.64	165.65	0.63	165.91	0.62	166.17	0.61	166.43	0.59	157
158	165.49	0.67	165.76	0.66	166.02	0.65	166.28	0.63	166.53	0.62	166.78	0.61	167.02	0.60	158
159	166.16	0.67	166.42	0.65	166.67	0.64	166.91	0.63	167.15	0.62	167.39	0.61	167.62	0.60	159
160	166.83	0.66	167.07	0.65	167.31	0.64	167.54	0.63	167.77	0.62	168.00	0.60	168.22	0.59	160
161	167.49	0.67	167.72	0.65	167.95	0.64	168.17	0.63	168.39	0.62	168.60	0.61	168.81	0.60	161
162	168.16	0.66	168.37	0.65	168.59	0.64	168.80	0.63	169.01	0.61	169.21	0.60	169.41	0.59	162
163	168.82	0.66	169.02	0.65	169.23	0.64	169.43	0.62	169.62	0.62	169.81	0.61	170.00	0.59	163
164	169.48	0.66	169.67	0.65	169.87	0.63	170.05	0.63	170.24	0.61	170.42	0.60	170.59	0.59	164
165	170.14	0.66	170.32	0.65	170.50	0.64	170.68	0.62	170.85	0.61	171.02	0.60	171.18	0.60	165
166	170.80	0.66	170.97	0.65	171.14	0.64	171.30	0.63	171.46	0.62	171.62	0.60	171.78	0.59	166
167	171.46	0.66	171.62	0.65	171.78	0.63	171.93	0.62	172.08	0.61	172.22	0.60	172.37	0.58	167
168	172.12	0.66	172.27	0.64	172.41	0.63	172.55	0.62	172.69	0.61	172.82	0.60	172.95	0.59	168
169	172.78	0.66	172.91	0.65	173.04	0.64	173.17	0.63	173.30	0.61	173.42	0.60	173.54	0.59	169
170	173.44	0.66	173.56	0.65	173.68	0.63	173.80	0.62	173.91	0.61	174.02	0.60	174.13	0.59	170
171	174.10	0.65	174.21	0.64	174.31	0.64	174.42	0.62	174.52	0.61	174.62	0.60	174.72	0.59	171
172	174.75	0.66	174.85	0.65	174.95	0.63	175.04	0.62	175.13	0.61	175.22	0.60	175.31	0.59	172
173	175.41	0.66	175.50	0.64	175.58	0.63	175.66	0.62	175.74	0.61	175.82	0.60	175.90	0.58	173
174	176.07	0.65	176.14	0.65	176.21	0.63	176.28	0.62	176.35	0.61	176.42	0.59	176.48	0.59	174
175	176.72	0.66	176.79	0.64	176.84	0.64	176.90	0.62	176.96	0.61	177.01	0.60	177.07	0.59	175
176	177.38	0.65	177.43	0.64	177.48	0.63	177.52	0.62	177.57	0.61	177.61	0.60	177.66	0.58	176
177	178.03	0.66	178.07	0.64	178.11	0.63	178.14	0.62	178.18	0.60	178.21	0.60	178.24	0.59	177
178	178.69	0.65	178.71	0.65	178.74	0.63	178.76	0.62	178.78	0.61	178.81	0.59	178.83	0.58	178
179	179.34	0.66	179.36	0.64	179.37	0.63	179.38	0.62	179.39	0.61	179.40	0.60	179.41	0.59	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .29$		$e = .30$		$e = .31$		$e = .32$		$e = .33$		$e = .34$		$e = .35$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
0	0.00	1.90	0.00	1.95	0.00	2.00	0.00	2.05	0.00	2.10	0.00	2.16	0.00	2.22	0
1	1.90	1.90	1.95	1.94	2.00	1.99	2.05	2.05	2.10	2.10	2.16	2.16	2.22	2.21	1
2	3.80	1.89	3.89	1.95	3.99	2.00	4.10	2.04	4.20	2.10	4.32	2.15	4.43	2.21	2
3	5.69	1.89	5.84	1.94	5.99	1.99	6.14	2.04	6.30	2.10	6.47	2.15	6.64	2.21	3
4	7.58	1.89	7.78	1.93	7.98	1.98	8.18	2.04	8.40	2.08	8.62	2.14	8.85	2.20	4
5	9.47	1.89	9.71	1.93	9.96	1.98	10.22	2.03	10.48	2.09	10.76	2.14	11.05	2.19	5
6	11.36	1.88	11.64	1.93	11.94	1.97	12.25	2.02	12.57	2.07	12.90	2.12	13.24	2.18	6
7	13.24	1.87	13.57	1.92	13.91	1.97	14.27	2.02	14.64	2.07	15.02	2.12	15.42	2.17	7
8	15.11	1.86	15.49	1.91	15.88	1.96	16.29	2.00	16.71	2.05	17.14	2.11	17.59	2.16	8
9	16.97	1.86	17.40	1.90	17.84	1.95	18.29	1.99	18.76	2.04	19.25	2.09	19.75	2.14	9
10	18.83	1.85	19.30	1.89	19.79	1.93	20.28	1.98	20.80	2.03	21.34	2.07	21.89	2.13	10
11	20.68	1.84	21.19	1.88	21.72	1.92	22.26	1.97	22.83	2.01	23.41	2.07	24.02	2.11	11
12	22.52	1.83	23.07	1.87	23.64	1.92	24.23	1.96	24.84	2.00	25.48	2.04	26.13	2.09	12
13	24.35	1.82	24.94	1.86	25.56	1.90	26.19	1.94	26.84	1.99	27.52	2.03	28.22	2.07	13
14	26.17	1.80	26.80	1.84	27.46	1.88	28.13	1.92	28.83	1.96	29.55	2.01	30.29	2.06	14
15	27.97	1.80	28.64	1.83	29.34	1.87	30.05	1.91	30.79	1.95	31.56	1.99	32.35	2.03	15
16	29.77	1.78	30.47	1.82	31.21	1.85	31.96	1.90	32.74	1.94	33.55	1.97	34.38	2.01	16
17	31.55	1.77	32.29	1.81	33.06	1.84	33.86	1.87	34.68	1.91	35.52	1.95	36.39	1.99	17
18	33.32	1.75	34.10	1.78	34.90	1.82	35.73	1.86	36.59	1.89	37.47	1.93	38.38	1.96	18
19	35.07	1.74	35.88	1.78	36.72	1.81	37.59	1.84	38.48	1.87	39.40	1.90	40.34	1.94	19
20	36.81	1.72	37.66	1.75	38.53	1.79	39.43	1.82	40.35	1.85	41.30	1.89	42.28	1.92	20
21	38.53	1.71	39.41	1.74	40.32	1.77	41.25	1.80	42.20	1.83	43.19	1.86	44.20	1.89	21
22	40.24	1.70	41.15	1.72	42.09	1.75	43.05	1.78	44.03	1.81	45.05	1.84	46.09	1.86	22
23	41.94	1.67	42.87	1.71	43.84	1.73	44.83	1.76	45.84	1.79	46.89	1.81	47.95	1.84	23
24	43.61	1.67	44.58	1.69	45.57	1.71	46.59	1.74	47.63	1.77	48.70	1.79	49.79	1.82	24
25	45.28	1.64	46.27	1.67	47.28	1.70	48.33	1.71	49.40	1.74	50.49	1.77	51.61	1.79	25
26	46.92	1.63	47.94	1.65	48.98	1.68	50.04	1.70	51.14	1.72	52.26	1.74	53.40	1.76	26
27	48.55	1.61	49.59	1.63	50.66	1.65	51.74	1.68	52.86	1.70	54.00	1.72	55.16	1.74	27
28	50.16	1.60	51.22	1.62	52.31	1.64	53.42	1.66	54.56	1.67	55.72	1.69	56.90	1.72	28
29	51.76	1.58	52.84	1.60	53.95	1.62	55.08	1.63	56.23	1.66	57.41	1.67	58.62	1.69	29
30	53.34	1.56	54.44	1.58	55.57	1.59	56.71	1.62	57.89	1.63	59.08	1.65	60.31	1.66	30
31	54.90	1.54	56.02	1.56	57.16	1.58	58.33	1.59	59.52	1.61	60.73	1.63	61.97	1.63	31
32	56.44	1.53	57.58	1.54	58.74	1.56	59.92	1.58	61.13	1.59	62.36	1.60	63.60	1.62	32
33	57.97	1.51	59.12	1.53	60.30	1.54	61.50	1.55	62.72	1.56	63.96	1.57	65.22	1.58	33
34	59.48	1.49	60.65	1.51	61.84	1.52	63.05	1.53	64.28	1.54	65.53	1.55	66.80	1.57	34
35	60.97	1.48	62.16	1.48	63.36	1.50	64.58	1.51	65.82	1.52	67.08	1.53	68.37	1.54	35
36	62.45	1.46	63.64	1.48	64.86	1.48	66.09	1.49	67.34	1.50	68.61	1.51	69.91	1.51	36
37	63.91	1.44	65.12	1.45	66.34	1.46	67.58	1.47	68.84	1.48	70.12	1.49	71.42	1.49	37
38	65.35	1.43	66.57	1.43	67.80	1.44	69.05	1.45	70.32	1.46	71.61	1.46	72.91	1.47	38
39	66.78	1.41	68.00	1.42	69.24	1.43	70.50	1.43	71.78	1.43	73.07	1.44	74.38	1.44	39
40	68.19	1.39	69.42	1.40	70.67	1.40	71.93	1.41	73.21	1.42	74.51	1.42	75.82	1.43	40
41	69.58	1.37	70.82	1.38	72.07	1.39	73.34	1.39	74.63	1.40	75.93	1.40	77.25	1.40	41
42	70.95	1.36	72.20	1.36	73.46	1.37	74.73	1.38	76.03	1.37	77.33	1.38	78.65	1.38	42
43	72.31	1.34	73.56	1.35	74.83	1.35	76.11	1.35	77.40	1.36	78.71	1.36	80.03	1.36	43
44	73.65	1.33	74.91	1.33	76.18	1.34	77.46	1.34	78.76	1.34	80.07	1.33	81.39	1.33	44
45	74.98	1.31	76.24	1.31	77.51	1.32	78.80	1.32	80.10	1.31	81.40	1.32	82.72	1.32	45
46	76.29	1.30	77.55	1.30	78.83	1.30	80.12	1.30	81.41	1.30	82.72	1.30	84.04	1.29	46
47	77.59	1.28	78.85	1.28	80.13	1.28	81.42	1.28	82.71	1.28	84.02	1.28	85.33	1.28	47
48	78.87	1.26	80.13	1.27	81.41	1.27	82.70	1.26	83.99	1.27	85.30	1.26	86.61	1.26	48
49	80.13	1.25	81.40	1.25	82.68	1.25	83.96	1.25	85.26	1.24	86.56	1.24	87.87	1.24	49
50	81.38	1.23	82.65	1.23	83.93	1.23	85.21	1.23	86.50	1.23	87.80	1.23	89.11	1.22	50
51	82.61	1.22	83.88	1.22	85.16	1.22	86.44	1.22	87.73	1.21	89.03	1.21	90.33	1.20	51
52	83.83	1.21	85.10	1.21	86.38	1.20	87.66	1.19	88.94	1.20	90.24	1.19	91.53	1.19	52
53	85.04	1.19	86.31	1.19	87.58	1.19	88.85	1.19	90.14	1.18	91.43	1.17	92.72	1.17	53
54	86.23	1.18	87.50	1.17	88.77	1.17	90.04	1.17	91.32	1.16	92.60	1.16	93.89	1.15	54
55	87.41	1.17	88.67	1.16	89.94	1.15	91.21	1.15	92.48	1.15	93.76	1.14	95.04	1.13	55
56	88.58	1.15	89.83	1.15	91.09	1.15	92.36	1.14	93.63	1.13	94.90	1.12	96.17	1.12	56
57	89.73	1.13	90.98	1.13	92.24	1.13	93.50	1.12	94.76	1.12	96.02	1.11	97.29	1.10	57
58	90.86	1.13	92.11	1.12	93.37	1.11	94.62	1.11	95.88	1.10	97.13	1.10	98.39	1.09	58
59	91.99	1.11	93.23	1.11	94.48	1.10	95.73	1.09	96.98	1.09	98.23	1.08	99.48	1.07	59
60	93.10		94.34		95.58		96.82		98.07		99.31		100.55		60

M.	e = .29		e = .30		e = .31		e = .32		e = .33		e = .34		e = .35		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60°	93.10	1.10	94.34	1.09	95.58	1.09	96.82	1.09	98.07	1.07	99.31	1.07	100.55	1.06	60°
61	94.20	1.09	95.43	1.08	96.67	1.07	97.91	1.06	99.14	1.06	100.38	1.05	101.61	1.05	61
62	95.29	1.07	96.51	1.07	97.74	1.07	98.97	1.06	100.20	1.05	101.43	1.04	102.66	1.03	62
63	96.36	1.06	97.58	1.06	98.81	1.05	100.03	1.04	101.25	1.04	102.47	1.03	103.69	1.02	63
64	97.42	1.05	98.64	1.04	99.86	1.03	101.07	1.03	102.29	1.02	103.50	1.01	104.71	1.00	64
65	98.47	1.04	99.68	1.04	100.89	1.03	102.10	1.02	103.31	1.00	104.51	1.00	105.71	0.99	65
66	99.51	1.03	100.72	1.02	101.92	1.01	103.12	1.00	104.31	1.00	105.51	0.99	106.70	0.98	66
67	100.54	1.02	101.74	1.01	102.93	1.00	104.12	1.00	105.31	0.99	106.50	0.97	107.68	0.96	67
68	101.56	1.01	102.75	1.00	103.93	1.00	105.12	0.98	106.30	0.97	107.47	0.96	108.64	0.95	68
69	102.57	0.99	103.75	0.99	104.93	0.98	106.10	0.97	107.27	0.96	108.43	0.96	109.59	0.95	69
70	103.56	0.99	104.74	0.97	105.91	0.96	107.07	0.96	108.23	0.95	109.39	0.94	110.54	0.93	70
71	104.55	0.97	105.71	0.97	106.87	0.96	108.03	0.95	109.18	0.94	110.33	0.93	111.47	0.92	71
72	105.52	0.97	106.68	0.96	107.83	0.95	108.98	0.94	110.12	0.93	111.26	0.92	112.39	0.91	72
73	106.49	0.96	107.64	0.94	108.78	0.94	109.92	0.93	111.05	0.92	112.18	0.91	113.30	0.89	73
74	107.45	0.94	108.58	0.94	109.72	0.93	110.85	0.91	111.97	0.91	113.09	0.89	114.19	0.89	74
75	108.39	0.94	109.52	0.93	110.65	0.92	111.76	0.91	112.88	0.90	113.98	0.89	115.08	0.88	75
76	109.33	0.93	110.45	0.92	111.57	0.90	112.67	0.90	113.78	0.88	114.87	0.88	115.96	0.87	76
77	110.26	0.92	111.37	0.91	112.47	0.90	113.57	0.89	114.66	0.88	115.75	0.87	116.83	0.85	77
78	111.18	0.91	112.28	0.90	113.37	0.89	114.46	0.88	115.54	0.87	116.62	0.86	117.68	0.85	78
79	112.09	0.90	113.18	0.89	114.26	0.89	115.34	0.87	116.41	0.86	117.48	0.85	118.53	0.84	79
80	112.99	0.89	114.07	0.88	115.15	0.87	116.21	0.87	117.27	0.86	118.33	0.84	119.37	0.83	80
81	113.88	0.88	114.95	0.88	116.02	0.86	117.08	0.85	118.13	0.84	119.17	0.83	120.20	0.82	81
82	114.76	0.88	115.83	0.87	116.88	0.86	117.93	0.85	118.97	0.83	120.00	0.82	121.02	0.82	82
83	115.64	0.87	116.70	0.85	117.74	0.85	118.78	0.83	119.80	0.83	120.82	0.82	121.84	0.80	83
84	116.51	0.86	117.55	0.85	118.59	0.84	119.61	0.83	120.63	0.82	121.64	0.81	122.64	0.80	84
85	117.37	0.85	118.40	0.84	119.43	0.83	120.44	0.82	121.45	0.81	122.45	0.80	123.44	0.79	85
86	118.22	0.85	119.24	0.84	120.26	0.82	121.26	0.82	122.26	0.80	123.25	0.79	124.23	0.78	86
87	119.07	0.84	120.08	0.83	121.08	0.82	122.08	0.80	123.06	0.80	124.04	0.78	125.01	0.77	87
88	119.91	0.83	120.91	0.82	121.90	0.81	122.88	0.80	123.86	0.79	124.82	0.78	125.78	0.77	88
89	120.74	0.82	121.73	0.81	122.71	0.80	123.68	0.80	124.65	0.78	125.60	0.77	126.55	0.75	89
90	121.56	0.82	122.54	0.81	123.51	0.80	124.48	0.78	125.43	0.77	126.37	0.76	127.30	0.76	90
91	122.38	0.81	123.35	0.80	124.31	0.79	125.26	0.78	126.20	0.77	127.13	0.76	128.06	0.74	91
92	123.19	0.80	124.15	0.79	125.10	0.78	126.04	0.77	126.97	0.76	127.89	0.75	128.80	0.74	92
93	123.99	0.80	124.94	0.79	125.88	0.78	126.81	0.77	127.73	0.75	128.64	0.74	129.54	0.73	93
94	124.79	0.79	125.73	0.78	126.66	0.77	127.58	0.75	128.48	0.75	129.38	0.74	130.27	0.73	94
95	125.58	0.78	126.51	0.77	127.43	0.76	128.33	0.76	129.23	0.74	130.12	0.73	131.00	0.72	95
96	126.37	0.78	127.28	0.77	128.19	0.76	129.09	0.74	129.97	0.74	130.85	0.72	131.72	0.71	96
97	127.15	0.77	128.05	0.77	128.95	0.75	129.83	0.74	130.71	0.73	131.57	0.72	132.43	0.71	97
98	127.92	0.77	128.82	0.75	129.70	0.75	130.57	0.74	131.44	0.72	132.29	0.71	133.14	0.70	98
99	128.69	0.76	129.57	0.75	130.45	0.74	131.31	0.73	132.16	0.72	133.00	0.71	133.84	0.69	99
100	129.45	0.76	130.32	0.75	131.19	0.73	132.04	0.72	132.88	0.71	133.71	0.70	134.53	0.69	100
101	130.21	0.75	131.07	0.74	131.92	0.73	132.76	0.72	133.59	0.71	134.41	0.70	135.22	0.69	101
102	130.96	0.74	131.81	0.73	132.65	0.72	133.48	0.71	134.30	0.70	135.11	0.69	135.91	0.67	102
103	131.70	0.74	132.54	0.73	133.37	0.72	134.19	0.71	135.00	0.69	135.80	0.68	136.58	0.68	103
104	132.44	0.74	133.27	0.73	134.09	0.71	134.90	0.70	135.69	0.69	136.48	0.68	137.26	0.67	104
105	133.18	0.73	134.00	0.72	134.80	0.71	135.60	0.70	136.38	0.69	137.16	0.68	137.93	0.66	105
106	133.91	0.73	134.72	0.71	135.51	0.70	136.30	0.69	137.07	0.68	137.84	0.67	138.59	0.66	106
107	134.64	0.72	135.43	0.71	136.21	0.70	136.99	0.69	137.75	0.68	138.51	0.66	139.25	0.66	107
108	135.36	0.71	136.14	0.71	136.91	0.70	137.68	0.68	138.43	0.67	139.17	0.66	139.91	0.65	108
109	136.07	0.72	136.85	0.70	137.61	0.69	138.36	0.68	139.10	0.67	139.83	0.66	140.56	0.64	109
110	136.79	0.70	137.55	0.69	138.30	0.68	139.04	0.67	139.77	0.66	140.49	0.65	141.20	0.64	110
111	137.49	0.71	138.24	0.69	138.98	0.68	139.71	0.67	140.43	0.66	141.14	0.65	141.84	0.64	111
112	138.20	0.69	138.93	0.69	139.66	0.68	140.38	0.67	141.09	0.66	141.79	0.64	142.48	0.63	112
113	138.89	0.70	139.62	0.68	140.34	0.67	141.05	0.66	141.75	0.65	142.43	0.64	143.11	0.63	113
114	139.59	0.69	140.30	0.68	141.01	0.67	141.71	0.66	142.40	0.64	143.07	0.64	143.74	0.63	114
115	140.28	0.69	140.98	0.68	141.68	0.66	142.37	0.65	143.04	0.64	143.71	0.63	144.37	0.62	115
116	140.97	0.68	141.66	0.67	142.34	0.67	143.02	0.65	143.68	0.64	144.34	0.63	144.99	0.61	116
117	141.65	0.68	142.33	0.67	143.01	0.65	143.67	0.64	144.32	0.64	144.97	0.62	145.60	0.62	117
118	142.33	0.67	143.00	0.66	143.66	0.66	144.31	0.65	144.96	0.63	145.59	0.62	146.22	0.61	118
119	143.00	0.68	143.66	0.67	144.32	0.65	144.96	0.64	145.59	0.63	146.21	0.62	146.83	0.60	119
120	143.68		144.33		144.97		145.60		146.22		146.83		147.43		120

M	$e = .29$		$e = .30$		$e = .31$		$e = .32$		$e = .33$		$e = .34$		$e = .35$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	143.68	0.66	144.33	0.65	144.97	0.64	145.60	0.63	146.22	0.62	146.83	0.61	147.43	0.61	120°
121	144.34	0.67	144.98	0.66	145.61	0.64	146.23	0.63	146.84	0.62	147.44	0.61	148.04	0.60	121
122	145.01	0.66	145.64	0.65	146.25	0.64	146.86	0.63	147.46	0.62	148.05	0.61	148.64	0.59	122
123	145.67	0.66	146.29	0.64	146.89	0.64	147.49	0.63	148.08	0.62	148.66	0.61	149.23	0.60	123
124	146.33	0.65	146.93	0.65	147.53	0.63	148.12	0.62	148.70	0.61	149.27	0.60	149.83	0.59	124
125	146.98	0.65	147.58	0.64	148.16	0.63	148.74	0.62	149.31	0.61	149.87	0.59	150.42	0.58	125
126	147.63	0.65	148.22	0.64	148.79	0.63	149.36	0.62	149.92	0.60	150.46	0.60	151.00	0.59	126
127	148.28	0.65	148.86	0.63	149.42	0.62	149.98	0.61	150.52	0.60	151.06	0.59	151.59	0.58	127
128	148.93	0.64	149.49	0.63	150.04	0.63	150.59	0.61	151.12	0.60	151.65	0.59	152.17	0.58	128
129	149.57	0.64	150.12	0.63	150.67	0.61	151.20	0.61	151.72	0.60	152.24	0.59	152.75	0.57	129
130	150.21	0.64	150.75	0.63	151.28	0.62	151.81	0.60	152.32	0.59	152.83	0.58	153.32	0.58	130
131	150.85	0.64	151.38	0.62	151.90	0.61	152.41	0.60	152.91	0.60	153.41	0.58	153.90	0.57	131
132	151.49	0.63	152.00	0.62	152.51	0.61	153.01	0.60	153.51	0.58	153.99	0.58	154.47	0.57	132
133	152.12	0.63	152.62	0.62	153.12	0.61	153.61	0.60	154.09	0.59	154.57	0.58	155.04	0.56	133
134	152.75	0.63	153.24	0.62	153.73	0.61	154.21	0.59	154.68	0.59	155.15	0.57	155.60	0.57	134
135	153.38	0.62	153.86	0.61	154.34	0.60	154.80	0.60	155.27	0.58	155.72	0.57	156.17	0.56	135
136	154.00	0.62	154.47	0.61	154.94	0.60	155.40	0.59	155.85	0.58	156.29	0.57	156.73	0.56	136
137	154.62	0.62	155.08	0.61	155.54	0.60	155.99	0.58	156.43	0.57	156.86	0.57	157.29	0.55	137
138	155.24	0.62	155.69	0.61	156.14	0.59	156.57	0.59	157.00	0.58	157.43	0.56	157.84	0.56	138
139	155.86	0.62	156.30	0.61	156.73	0.60	157.16	0.58	157.58	0.57	157.99	0.56	158.40	0.55	139
140	156.48	0.61	156.91	0.60	157.33	0.59	157.74	0.59	158.15	0.57	158.55	0.57	158.95	0.55	140
141	157.09	0.61	157.51	0.60	157.92	0.59	158.33	0.58	158.72	0.57	159.12	0.55	159.50	0.55	141
142	157.70	0.61	158.11	0.60	158.51	0.59	158.91	0.57	159.29	0.57	159.67	0.56	160.05	0.55	142
143	158.31	0.61	158.71	0.60	159.10	0.59	159.48	0.58	159.86	0.56	160.23	0.56	160.60	0.54	143
144	158.92	0.61	159.31	0.60	159.69	0.58	160.06	0.57	160.42	0.57	160.79	0.55	161.14	0.54	144
145	159.53	0.60	159.90	0.59	160.27	0.58	160.63	0.57	160.99	0.56	161.34	0.55	161.68	0.55	145
146	160.13	0.60	160.49	0.60	160.85	0.58	161.20	0.57	161.55	0.56	161.89	0.55	162.23	0.54	146
147	160.73	0.60	161.09	0.59	161.43	0.58	161.77	0.57	162.11	0.56	162.44	0.55	162.77	0.53	147
148	161.33	0.60	161.68	0.58	162.01	0.58	162.34	0.57	162.67	0.56	162.99	0.55	163.30	0.54	148
149	161.93	0.60	162.26	0.59	162.59	0.58	162.91	0.57	163.23	0.55	163.54	0.54	163.84	0.54	149
150	162.53	0.60	162.85	0.59	163.17	0.57	163.48	0.56	163.78	0.56	164.08	0.55	164.38	0.53	150
151	163.13	0.59	163.44	0.58	163.74	0.58	164.04	0.56	164.34	0.55	164.63	0.54	164.91	0.53	151
152	163.72	0.60	164.02	0.58	164.32	0.57	164.60	0.57	164.89	0.55	165.17	0.54	165.44	0.53	152
153	164.32	0.59	164.60	0.58	164.89	0.57	165.17	0.56	165.44	0.55	165.71	0.54	165.97	0.53	153
154	164.91	0.59	165.18	0.58	165.46	0.57	165.73	0.56	165.99	0.55	166.25	0.54	166.50	0.53	154
155	165.50	0.59	165.76	0.58	166.03	0.57	166.29	0.55	166.54	0.55	166.79	0.54	167.03	0.53	155
156	166.09	0.59	166.34	0.58	166.60	0.56	166.84	0.56	167.09	0.54	167.33	0.53	167.56	0.53	156
157	166.68	0.58	166.92	0.58	167.16	0.57	167.40	0.56	167.63	0.55	167.86	0.54	168.09	0.52	157
158	167.26	0.59	167.50	0.57	167.73	0.56	167.96	0.55	168.18	0.54	168.40	0.53	168.61	0.53	158
159	167.85	0.59	168.07	0.58	168.29	0.57	168.51	0.55	168.72	0.55	168.93	0.53	169.14	0.52	159
160	168.44	0.58	168.65	0.57	168.86	0.56	169.06	0.56	169.27	0.54	169.46	0.54	169.66	0.52	160
161	169.02	0.58	169.22	0.57	169.42	0.56	169.62	0.55	169.81	0.54	170.00	0.53	170.18	0.52	161
162	169.60	0.58	169.79	0.58	169.98	0.56	170.17	0.55	170.35	0.54	170.53	0.53	170.70	0.52	162
163	170.18	0.59	170.37	0.57	170.54	0.56	170.72	0.55	170.89	0.54	171.06	0.53	171.22	0.52	163
164	170.77	0.58	170.94	0.57	171.10	0.56	171.27	0.55	171.43	0.54	171.59	0.53	171.74	0.52	164
165	171.35	0.58	171.51	0.57	171.66	0.56	171.82	0.55	171.97	0.54	172.12	0.53	172.26	0.52	165
166	171.93	0.58	172.08	0.56	172.22	0.56	172.37	0.54	172.51	0.54	172.65	0.53	172.78	0.52	166
167	172.51	0.58	172.64	0.57	172.78	0.56	172.91	0.55	173.05	0.53	173.18	0.52	173.30	0.52	167
168	173.09	0.57	173.21	0.57	173.34	0.56	173.46	0.55	173.58	0.54	173.70	0.53	173.82	0.52	168
169	173.66	0.58	173.78	0.57	173.90	0.55	174.01	0.54	174.12	0.54	174.23	0.53	174.34	0.51	169
170	174.24	0.58	174.35	0.56	174.45	0.56	174.55	0.55	174.66	0.53	174.76	0.52	174.85	0.52	170
171	174.82	0.58	174.91	0.57	175.01	0.55	175.10	0.55	175.19	0.54	175.28	0.53	175.37	0.51	171
172	175.40	0.57	175.48	0.57	175.56	0.56	175.65	0.54	175.73	0.53	175.81	0.52	175.88	0.52	172
173	175.97	0.58	176.05	0.56	176.12	0.55	176.19	0.55	176.26	0.54	176.33	0.53	176.40	0.51	173
174	176.55	0.57	176.61	0.57	176.67	0.56	176.74	0.54	176.80	0.53	176.86	0.52	176.91	0.52	174
175	177.12	0.58	177.18	0.56	177.23	0.55	177.28	0.54	177.33	0.53	177.38	0.52	177.43	0.51	175
176	177.70	0.57	177.74	0.57	177.78	0.56	177.82	0.55	177.86	0.54	177.90	0.53	177.94	0.52	176
177	178.27	0.58	178.31	0.56	178.34	0.55	178.37	0.54	178.40	0.53	178.43	0.52	178.46	0.51	177
178	178.85	0.58	178.87	0.57	178.89	0.56	178.91	0.55	178.93	0.54	178.95	0.53	178.97	0.52	178
179	179.43	0.57	179.44	0.56	179.45	0.55	179.46	0.54	179.47	0.53	179.48	0.52	179.49	0.51	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	e = .36		e = .37		e = .38		e = .39		e = .40		e = .41		e = .42		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
0	0.00	2.28	0.00	2.34	0.00	2.41	0.00	2.47	0.00	2.55	0.00	2.62	0.00	2.70	0
1	2.28	2.27	2.34	2.34	2.41	2.40	2.47	2.47	2.55	2.54	2.62	2.62	2.70	2.69	1
2	4.55	2.27	4.68	2.33	4.81	2.40	4.94	2.47	5.09	2.54	5.24	2.61	5.39	2.69	2
3	6.82	2.27	7.01	2.33	7.21	2.39	7.41	2.46	7.63	2.52	7.85	2.60	8.08	2.67	3
4	9.09	2.26	9.34	2.32	9.60	2.38	9.87	2.45	10.15	2.52	10.45	2.58	10.75	2.67	4
5	11.35	2.25	11.66	2.31	11.98	2.37	12.32	2.44	12.67	2.50	13.03	2.58	13.42	2.64	5
6	13.60	2.24	13.97	2.30	14.35	2.36	14.76	2.42	15.17	2.49	15.61	2.55	16.06	2.63	6
7	15.84	2.22	16.27	2.28	16.71	2.35	17.18	2.40	17.66	2.47	18.16	2.54	18.69	2.60	7
8	18.06	2.21	18.55	2.27	19.06	2.32	19.58	2.39	20.13	2.45	20.70	2.51	21.29	2.58	8
9	20.27	2.20	20.82	2.25	21.38	2.31	21.97	2.36	22.58	2.42	23.21	2.49	23.87	2.54	9
10	22.47	2.18	23.07	2.23	23.69	2.28	24.33	2.34	25.00	2.40	25.70	2.45	26.41	2.52	10
11	24.65	2.16	25.30	2.21	25.97	2.27	26.67	2.32	27.40	2.37	28.15	2.43	28.93	2.49	11
12	26.81	2.14	27.51	2.19	28.24	2.24	28.99	2.29	29.77	2.34	30.58	2.39	31.42	2.45	12
13	28.95	2.12	29.70	2.16	30.48	2.21	31.28	2.26	32.11	2.32	32.97	2.37	33.87	2.41	13
14	31.07	2.10	31.86	2.15	32.69	2.19	33.54	2.24	34.43	2.28	35.34	2.33	36.28	2.38	14
15	33.17	2.07	34.01	2.11	34.88	2.16	35.78	2.20	36.71	2.24	37.67	2.29	38.66	2.34	15
16	35.24	2.05	36.12	2.09	37.04	2.13	37.98	2.17	38.95	2.22	39.96	2.26	41.00	2.30	16
17	37.29	2.02	38.21	2.07	39.17	2.10	40.15	2.15	41.17	2.18	42.22	2.22	43.30	2.26	17
18	39.31	2.00	40.28	2.03	41.27	2.08	42.30	2.11	43.35	2.15	44.44	2.19	45.56	2.22	18
19	41.31	1.98	42.31	2.01	43.35	2.04	44.41	2.07	45.50	2.11	46.63	2.14	47.78	2.18	19
20	43.29	1.95	44.32	1.98	45.39	2.01	46.48	2.05	47.61	2.08	48.77	2.11	49.96	2.14	20
21	45.24	1.92	46.30	1.96	47.40	1.98	48.53	2.01	49.69	2.04	50.88	2.07	52.10	2.10	21
22	47.16	1.89	48.26	1.92	49.38	1.95	50.54	1.98	51.73	2.00	52.95	2.03	54.20	2.05	22
23	49.05	1.87	50.18	1.89	51.33	1.92	52.52	1.94	53.73	1.97	54.98	1.99	56.25	2.02	23
24	50.92	1.84	52.07	1.87	53.25	1.89	54.46	1.91	55.70	1.93	56.97	1.95	58.27	1.97	24
25	52.76	1.81	53.94	1.83	55.14	1.86	56.37	1.88	57.63	1.90	58.92	1.92	60.24	1.94	25
26	54.57	1.79	55.77	1.81	57.00	1.82	58.25	1.84	59.53	1.86	60.84	1.88	62.18	1.89	26
27	56.36	1.76	57.58	1.77	58.82	1.79	60.09	1.81	61.39	1.83	62.72	1.84	64.07	1.86	27
28	58.12	1.73	59.35	1.75	60.61	1.77	61.90	1.78	63.22	1.79	64.56	1.80	65.93	1.81	28
29	59.85	1.70	61.10	1.72	62.38	1.73	63.68	1.75	65.01	1.76	66.36	1.77	67.74	1.78	29
30	61.55	1.68	62.82	1.69	64.11	1.70	65.43	1.71	66.77	1.72	68.13	1.74	69.52	1.74	30
31	63.23	1.65	64.51	1.66	65.81	1.68	67.14	1.68	68.49	1.69	69.87	1.70	71.26	1.71	31
32	64.88	1.62	66.17	1.63	67.49	1.64	68.82	1.66	70.18	1.67	71.57	1.66	72.97	1.67	32
33	66.50	1.60	67.80	1.61	69.13	1.61	70.48	1.62	71.85	1.62	73.23	1.63	74.64	1.63	33
34	68.10	1.57	69.41	1.58	70.74	1.59	72.10	1.59	73.47	1.60	74.86	1.60	76.27	1.60	34
35	69.67	1.54	70.99	1.55	72.33	1.56	73.69	1.56	75.07	1.56	76.46	1.57	77.87	1.57	35
36	71.21	1.52	72.54	1.53	73.89	1.53	75.25	1.53	76.63	1.54	78.03	1.54	79.44	1.54	36
37	72.73	1.50	74.07	1.50	75.42	1.50	76.78	1.51	78.17	1.50	79.57	1.50	80.98	1.50	37
38	74.23	1.47	75.57	1.47	76.92	1.48	78.29	1.48	79.67	1.48	81.07	1.48	82.48	1.48	38
39	75.70	1.45	77.04	1.45	78.40	1.45	79.77	1.45	81.15	1.45	82.55	1.44	83.96	1.44	39
40	77.15	1.43	78.49	1.43	79.85	1.42	81.22	1.42	82.60	1.42	83.99	1.42	85.40	1.42	40
41	78.58	1.40	79.92	1.40	81.27	1.41	82.64	1.40	84.02	1.40	85.41	1.40	86.82	1.38	41
42	79.98	1.38	81.32	1.38	82.68	1.37	84.04	1.38	85.42	1.37	86.81	1.36	88.20	1.36	42
43	81.36	1.35	82.70	1.36	84.05	1.36	85.42	1.35	86.79	1.34	88.17	1.34	89.56	1.33	43
44	82.71	1.34	84.06	1.33	85.41	1.33	86.77	1.32	88.13	1.33	89.51	1.32	90.89	1.31	44
45	84.05	1.32	85.39	1.31	86.74	1.30	88.09	1.30	89.46	1.29	90.83	1.29	92.20	1.29	45
46	85.37	1.29	86.70	1.29	88.04	1.29	89.39	1.29	90.75	1.28	92.12	1.26	93.49	1.25	46
47	86.66	1.27	87.99	1.27	89.33	1.26	90.68	1.25	92.03	1.25	93.38	1.25	94.74	1.24	47
48	87.93	1.26	89.26	1.25	90.59	1.25	91.93	1.24	93.28	1.23	94.63	1.22	95.98	1.21	48
49	89.19	1.23	90.51	1.23	91.84	1.22	93.17	1.22	94.51	1.21	95.85	1.20	97.19	1.19	49
50	90.42	1.22	91.74	1.21	93.06	1.20	94.39	1.19	95.72	1.18	97.05	1.18	98.38	1.17	50
51	91.64	1.19	92.95	1.19	94.26	1.19	95.58	1.18	96.90	1.17	98.23	1.15	99.55	1.15	51
52	92.83	1.18	94.14	1.17	95.45	1.16	96.76	1.15	98.07	1.15	99.38	1.14	100.70	1.12	52
53	94.01	1.16	95.31	1.16	96.61	1.15	97.91	1.14	99.22	1.13	100.52	1.12	101.82	1.11	53
54	95.17	1.15	96.47	1.13	97.76	1.13	99.05	1.12	100.35	1.10	101.64	1.10	102.93	1.09	54
55	96.32	1.13	97.60	1.12	98.89	1.11	100.17	1.10	101.45	1.10	102.74	1.08	104.02	1.07	55
56	97.45	1.11	98.72	1.10	100.00	1.09	101.27	1.09	102.55	1.07	103.82	1.06	105.09	1.05	56
57	98.56	1.09	99.82	1.09	101.09	1.08	102.36	1.07	103.62	1.06	104.88	1.05	106.14	1.04	57
58	99.65	1.08	100.91	1.07	102.17	1.06	103.43	1.05	104.68	1.04	105.93	1.03	107.18	1.02	58
59	100.73	1.07	101.98	1.06	103.23	1.05	104.48	1.03	105.72	1.03	106.96	1.01	108.20	1.00	59
60	101.80		103.04		104.28		105.51		106.75		107.97		109.20		60

M	e = .36		e = .37		e = .38		e = .39		e = .40		e = .41		e = .42		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60°	101.80	1.05	103.04	1.04	104.28	1.03	105.51	1.02	106.75	1.00	107.97	1.00	109.20	0.98	60°
61	102.85	1.03	104.08	1.02	105.31	1.01	106.53	1.01	107.75	1.00	108.97	0.98	110.18	0.98	61
62	103.88	1.02	105.10	1.01	106.32	1.00	107.54	0.99	108.75	0.98	109.95	0.97	111.16	0.95	62
63	104.90	1.01	106.11	1.00	107.32	0.99	108.53	0.97	109.73	0.96	110.92	0.95	112.11	0.94	63
64	105.91	0.99	107.11	0.99	108.31	0.97	109.50	0.96	110.69	0.95	111.87	0.94	113.05	0.93	64
65	106.90	0.98	108.10	0.97	109.28	0.96	110.46	0.95	111.64	0.94	112.81	0.93	113.98	0.91	65
66	107.88	0.97	109.07	0.95	110.24	0.95	111.41	0.94	112.58	0.92	113.74	0.91	114.89	0.90	66
67	108.85	0.96	110.02	0.95	111.19	0.93	112.35	0.92	113.50	0.91	114.65	0.90	115.79	0.89	67
68	109.81	0.94	110.97	0.93	112.12	0.92	113.27	0.91	114.41	0.90	115.55	0.89	116.68	0.88	68
69	110.75	0.93	111.90	0.92	113.04	0.91	114.18	0.90	115.31	0.89	116.44	0.87	117.56	0.86	69
70	111.68	0.92	112.82	0.91	113.95	0.90	115.08	0.89	116.20	0.88	117.31	0.86	118.42	0.85	70
71	112.60	0.91	113.73	0.90	114.85	0.89	115.97	0.87	117.08	0.86	118.17	0.86	119.27	0.84	71
72	113.51	0.90	114.63	0.89	115.74	0.87	116.84	0.87	117.94	0.85	119.03	0.84	120.11	0.83	72
73	114.41	0.89	115.52	0.87	116.61	0.87	117.71	0.85	118.79	0.84	119.87	0.82	120.94	0.81	73
74	115.30	0.87	116.39	0.87	117.48	0.85	118.56	0.84	119.63	0.83	120.69	0.82	121.75	0.81	74
75	116.17	0.87	117.26	0.85	118.33	0.85	119.40	0.83	120.46	0.82	121.51	0.81	122.56	0.79	75
76	117.04	0.86	118.11	0.85	119.18	0.83	120.23	0.83	121.28	0.81	122.32	0.80	123.35	0.79	76
77	117.90	0.84	118.96	0.83	120.01	0.82	121.06	0.81	122.09	0.80	123.12	0.79	124.14	0.78	77
78	118.74	0.84	119.79	0.83	120.83	0.82	121.87	0.80	122.89	0.79	123.91	0.78	124.92	0.77	78
79	119.58	0.83	120.62	0.82	121.65	0.80	122.67	0.79	123.68	0.79	124.69	0.77	125.69	0.75	79
80	120.41	0.82	121.44	0.80	122.45	0.80	123.46	0.79	124.47	0.77	125.46	0.76	126.44	0.75	80
81	121.23	0.81	122.24	0.80	123.25	0.79	124.25	0.77	125.24	0.76	126.22	0.75	127.19	0.74	81
82	122.04	0.80	123.04	0.79	124.04	0.78	125.02	0.77	126.00	0.76	126.97	0.75	127.93	0.73	82
83	122.84	0.79	123.83	0.78	124.82	0.77	125.79	0.76	126.76	0.75	127.72	0.73	128.66	0.73	83
84	123.63	0.79	124.61	0.78	125.59	0.76	126.55	0.75	127.51	0.74	128.45	0.73	129.39	0.72	84
85	124.42	0.77	125.39	0.76	126.35	0.75	127.30	0.75	128.25	0.73	129.18	0.72	130.11	0.70	85
86	125.19	0.77	126.15	0.76	127.10	0.75	128.05	0.73	128.98	0.72	129.90	0.71	130.81	0.70	86
87	125.96	0.77	126.91	0.75	127.85	0.74	128.78	0.73	129.70	0.72	130.61	0.71	131.51	0.70	87
88	126.73	0.75	127.66	0.75	128.59	0.73	129.51	0.72	130.42	0.71	131.32	0.69	132.21	0.68	88
89	127.48	0.75	128.41	0.73	129.32	0.73	130.23	0.71	131.13	0.70	132.01	0.69	132.89	0.68	89
90	128.23	0.74	129.14	0.73	130.05	0.72	130.94	0.71	131.83	0.69	132.70	0.69	133.57	0.67	90
91	128.97	0.73	129.87	0.72	130.77	0.71	131.65	0.70	132.52	0.69	133.39	0.68	134.24	0.67	91
92	129.70	0.73	130.59	0.72	131.48	0.70	132.35	0.69	133.21	0.68	134.07	0.67	134.91	0.66	92
93	130.43	0.72	131.31	0.71	132.18	0.70	133.04	0.69	133.89	0.68	134.74	0.66	135.57	0.65	93
94	131.15	0.71	132.02	0.70	132.88	0.69	133.73	0.68	134.57	0.67	135.40	0.66	136.22	0.65	94
95	131.86	0.71	132.72	0.70	133.57	0.68	134.41	0.67	135.24	0.66	136.06	0.65	136.87	0.64	95
96	132.57	0.70	133.42	0.69	134.25	0.68	135.08	0.67	135.90	0.66	136.71	0.64	137.51	0.63	96
97	133.27	0.70	134.11	0.68	134.93	0.68	135.75	0.66	136.56	0.65	137.35	0.64	138.14	0.63	97
98	133.97	0.69	134.79	0.68	135.61	0.67	136.41	0.66	137.21	0.64	137.99	0.64	138.77	0.62	98
99	134.66	0.68	135.47	0.67	136.28	0.66	137.07	0.65	137.85	0.64	138.63	0.63	139.39	0.62	99
100	135.34	0.68	136.14	0.67	136.94	0.65	137.72	0.65	138.49	0.64	139.26	0.62	140.01	0.62	100
101	136.02	0.67	136.81	0.66	137.59	0.65	138.37	0.64	139.13	0.63	139.88	0.62	140.63	0.60	101
102	136.69	0.67	137.47	0.66	138.24	0.65	139.01	0.63	139.76	0.62	140.50	0.61	141.23	0.60	102
103	137.36	0.66	138.13	0.65	138.89	0.64	139.64	0.63	140.38	0.62	141.11	0.61	141.83	0.60	103
104	138.02	0.66	138.78	0.65	139.53	0.64	140.27	0.63	141.00	0.62	141.72	0.60	142.43	0.60	104
105	138.68	0.66	139.43	0.64	140.17	0.63	140.90	0.62	141.62	0.61	142.32	0.60	143.03	0.58	105
106	139.34	0.65	140.07	0.64	140.80	0.63	141.52	0.61	142.23	0.60	142.92	0.60	143.61	0.59	106
107	139.99	0.64	140.71	0.63	141.43	0.62	142.13	0.61	142.83	0.60	143.52	0.59	144.20	0.58	107
108	140.63	0.64	141.34	0.63	142.05	0.62	142.74	0.61	143.43	0.60	144.11	0.58	144.78	0.57	108
109	141.27	0.63	141.97	0.63	142.67	0.61	143.35	0.60	144.03	0.59	144.69	0.59	145.35	0.57	109
110	141.90	0.63	142.60	0.62	143.28	0.61	143.95	0.60	144.62	0.59	145.28	0.57	145.92	0.57	110
111	142.53	0.63	143.22	0.61	143.89	0.60	144.55	0.60	145.21	0.58	145.85	0.58	146.49	0.56	111
112	143.16	0.62	143.83	0.61	144.49	0.60	145.15	0.59	145.79	0.58	146.43	0.57	147.05	0.56	112
113	143.78	0.62	144.44	0.61	145.09	0.60	145.74	0.58	146.37	0.58	147.00	0.56	147.61	0.56	113
114	144.40	0.61	145.05	0.60	145.69	0.59	146.32	0.58	146.95	0.57	147.56	0.56	148.17	0.55	114
115	145.01	0.61	145.65	0.60	146.28	0.59	146.90	0.58	147.52	0.57	148.12	0.56	148.72	0.55	115
116	145.62	0.61	146.25	0.60	146.87	0.59	147.48	0.58	148.09	0.56	148.68	0.56	149.27	0.54	116
117	146.23	0.60	146.85	0.59	147.46	0.58	148.06	0.57	148.65	0.56	149.24	0.55	149.81	0.54	117
118	146.83	0.60	147.44	0.59	148.04	0.58	148.63	0.57	149.21	0.56	149.79	0.54	150.35	0.54	118
119	147.43	0.60	148.03	0.59	148.62	0.57	149.20	0.56	149.77	0.56	150.33	0.55	150.89	0.54	119
120	148.03		148.62		149.19		149.76		150.33		150.88		151.43		120

M	$e = .36$		$e = .37$		$e = .38$		$e = .39$		$e = .40$		$e = .41$		$e = .42$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	148.03	0.59	148.62	0.58	149.19	0.57	149.76	0.57	150.33	0.55	150.88	0.54	151.43	0.53	120°
121	148.62	0.59	149.20	0.58	149.76	0.57	150.33	0.55	150.88	0.55	151.42	0.54	151.96	0.53	121
122	149.21	0.59	149.78	0.57	150.33	0.57	150.88	0.56	151.43	0.54	151.96	0.53	152.49	0.52	122
123	149.80	0.58	150.35	0.57	150.90	0.56	151.44	0.55	151.97	0.54	152.49	0.54	153.01	0.52	123
124	150.38	0.58	150.92	0.57	151.46	0.56	151.99	0.55	152.51	0.54	153.03	0.53	153.53	0.52	124
125	150.96	0.58	151.49	0.57	152.02	0.56	152.54	0.55	153.05	0.54	153.56	0.52	154.05	0.52	125
126	151.54	0.57	152.06	0.56	152.58	0.55	153.09	0.54	153.59	0.53	154.08	0.53	154.57	0.51	126
127	152.11	0.57	152.62	0.56	153.13	0.55	153.63	0.54	154.12	0.53	154.61	0.52	155.08	0.51	127
128	152.68	0.57	153.18	0.56	153.68	0.55	154.17	0.54	154.65	0.53	155.13	0.52	155.59	0.51	128
129	153.25	0.57	153.74	0.56	154.23	0.54	154.71	0.53	155.18	0.53	155.65	0.51	156.10	0.51	129
130	153.82	0.56	154.30	0.55	154.77	0.55	155.24	0.54	155.71	0.52	156.16	0.52	156.61	0.50	130
131	154.38	0.56	154.85	0.55	155.32	0.54	155.78	0.53	156.23	0.52	156.68	0.51	157.11	0.51	131
132	154.94	0.56	155.40	0.55	155.86	0.54	156.31	0.53	156.75	0.52	157.19	0.51	157.62	0.50	132
133	155.50	0.55	155.95	0.55	156.40	0.53	156.84	0.52	157.27	0.51	157.70	0.50	158.12	0.49	133
134	156.05	0.56	156.50	0.54	156.93	0.54	157.36	0.53	157.78	0.52	158.20	0.51	158.61	0.50	134
135	156.61	0.55	157.04	0.54	157.47	0.53	157.89	0.52	158.30	0.51	158.71	0.50	159.11	0.49	135
136	157.16	0.55	157.58	0.54	158.00	0.53	158.41	0.52	158.81	0.51	159.21	0.50	159.60	0.49	136
137	157.71	0.54	158.12	0.53	158.53	0.52	158.93	0.51	159.32	0.51	159.71	0.50	160.09	0.49	137
138	158.25	0.55	158.65	0.54	159.05	0.53	159.44	0.52	159.83	0.50	160.21	0.49	160.58	0.49	138
139	158.80	0.54	159.19	0.53	159.58	0.52	159.96	0.51	160.33	0.51	160.70	0.50	161.07	0.48	139
140	159.34	0.54	159.72	0.53	160.10	0.52	160.47	0.51	160.84	0.50	161.20	0.49	161.55	0.49	140
141	159.88	0.54	160.25	0.53	160.62	0.52	160.98	0.51	161.34	0.50	161.69	0.49	162.04	0.48	141
142	160.42	0.54	160.78	0.53	161.14	0.52	161.49	0.51	161.84	0.50	162.18	0.49	162.52	0.48	142
143	160.96	0.53	161.31	0.52	161.66	0.51	162.00	0.51	162.34	0.49	162.67	0.49	163.00	0.47	143
144	161.49	0.53	161.83	0.53	162.17	0.52	162.51	0.50	162.83	0.50	163.16	0.48	163.47	0.48	144
145	162.02	0.54	162.36	0.52	162.69	0.51	163.01	0.50	163.33	0.49	163.64	0.49	163.95	0.48	145
146	162.56	0.53	162.88	0.52	163.20	0.51	163.51	0.50	163.82	0.49	164.13	0.48	164.43	0.47	146
147	163.09	0.52	163.40	0.52	163.71	0.51	164.01	0.50	164.31	0.49	164.61	0.48	164.90	0.47	147
148	163.61	0.53	163.92	0.52	164.22	0.51	164.51	0.50	164.80	0.49	165.09	0.48	165.37	0.47	148
149	164.14	0.53	164.44	0.52	164.73	0.51	165.01	0.50	165.29	0.49	165.57	0.48	165.84	0.47	149
150	164.67	0.52	164.95	0.52	165.23	0.51	165.51	0.50	165.78	0.49	166.05	0.48	166.31	0.47	150
151	165.19	0.52	165.47	0.51	165.74	0.50	166.01	0.49	166.27	0.48	166.53	0.47	166.78	0.47	151
152	165.71	0.52	165.98	0.51	166.24	0.50	166.50	0.49	166.75	0.49	167.00	0.48	167.25	0.46	152
153	166.23	0.52	166.49	0.51	166.74	0.50	166.99	0.49	167.24	0.48	167.48	0.47	167.71	0.46	153
154	166.75	0.52	167.00	0.51	167.24	0.50	167.48	0.49	167.72	0.48	167.95	0.47	168.18	0.46	154
155	167.27	0.52	167.51	0.51	167.74	0.50	167.97	0.49	168.20	0.48	168.42	0.47	168.64	0.46	155
156	167.79	0.52	168.02	0.51	168.24	0.50	168.46	0.49	168.68	0.48	168.89	0.47	169.10	0.47	156
157	168.31	0.51	168.53	0.50	168.74	0.50	168.95	0.49	169.16	0.48	169.36	0.47	169.57	0.46	157
158	168.82	0.52	169.03	0.51	169.24	0.49	169.44	0.49	169.64	0.48	169.83	0.47	170.03	0.46	158
159	169.34	0.51	169.54	0.50	169.73	0.50	169.93	0.48	170.12	0.47	170.30	0.47	170.49	0.45	159
160	169.85	0.52	170.04	0.51	170.23	0.49	170.41	0.49	170.59	0.48	170.77	0.47	170.94	0.46	160
161	170.37	0.51	170.55	0.50	170.72	0.49	170.90	0.48	171.07	0.47	171.24	0.46	171.40	0.46	161
162	170.88	0.51	171.05	0.50	171.21	0.50	171.38	0.48	171.54	0.48	171.70	0.47	171.86	0.46	162
163	171.39	0.51	171.55	0.50	171.71	0.49	171.86	0.49	172.02	0.47	172.17	0.46	172.32	0.45	163
164	171.90	0.51	172.05	0.50	172.20	0.49	172.35	0.48	172.49	0.47	172.63	0.47	172.77	0.46	164
165	172.41	0.51	172.55	0.50	172.69	0.49	172.83	0.48	172.96	0.47	173.10	0.46	173.23	0.45	165
166	172.92	0.51	173.05	0.50	173.18	0.49	173.31	0.48	173.43	0.48	173.56	0.46	173.68	0.45	166
167	173.43	0.50	173.55	0.50	173.67	0.49	173.79	0.48	173.91	0.47	174.02	0.46	174.13	0.46	167
168	173.93	0.51	174.05	0.50	174.16	0.49	174.27	0.48	174.38	0.47	174.48	0.46	174.59	0.45	168
169	174.44	0.51	174.55	0.49	174.65	0.48	174.75	0.48	174.85	0.47	174.94	0.47	175.04	0.45	169
170	174.95	0.51	175.04	0.50	175.13	0.49	175.23	0.48	175.32	0.47	175.41	0.46	175.49	0.46	170
171	175.46	0.50	175.54	0.50	175.62	0.49	175.71	0.47	175.79	0.47	175.87	0.46	175.95	0.45	171
172	175.96	0.51	176.04	0.49	176.11	0.49	176.18	0.48	176.26	0.46	176.33	0.46	176.40	0.45	172
173	176.47	0.50	176.53	0.50	176.60	0.48	176.66	0.48	176.72	0.47	176.79	0.46	176.85	0.45	173
174	176.97	0.51	177.03	0.49	177.08	0.49	177.14	0.48	177.19	0.47	177.25	0.46	177.30	0.45	174
175	177.48	0.50	177.52	0.50	177.57	0.49	177.62	0.47	177.66	0.47	177.71	0.45	177.75	0.45	175
176	177.98	0.51	178.02	0.50	178.06	0.48	178.09	0.48	178.13	0.47	178.16	0.46	178.20	0.45	176
177	178.49	0.50	178.52	0.49	178.54	0.49	178.57	0.48	178.60	0.46	178.62	0.46	178.65	0.45	177
178	178.99	0.51	179.01	0.50	179.03	0.49	179.05	0.47	179.06	0.47	179.08	0.46	179.10	0.45	178
179	179.50	0.50	179.51	0.49	179.52	0.48	179.52	0.48	179.53	0.47	179.54	0.46	179.55	0.45	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .43$		$e = .44$		$e = .45$		$e = .46$		$e = .47$		$e = .48$		$e = .49$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
0	0.00	2.78	0.00	2.86	0.00	2.95	0.00	3.04	0.00	3.14	0.00	3.24	0.00	3.35	0
1	2.78	2.77	2.86	2.86	2.95	2.95	3.04	3.04	3.14	3.14	3.24	3.24	3.35	3.34	1
2	5.55	2.77	5.72	2.85	5.90	2.93	6.08	3.03	6.28	3.12	6.48	3.22	6.69	3.33	2
3	8.32	2.75	8.57	2.84	8.83	2.92	9.11	3.01	9.40	3.11	9.70	3.21	10.02	3.31	3
4	11.07	2.74	11.41	2.82	11.75	2.91	12.12	2.99	12.51	3.08	12.91	3.17	13.33	3.27	4
5	13.81	2.72	14.23	2.80	14.66	2.88	15.11	2.97	15.59	3.05	16.08	3.15	16.60	3.24	5
6	16.53	2.70	17.03	2.77	17.54	2.85	18.08	2.94	18.64	3.02	19.23	3.11	19.84	3.21	6
7	19.23	2.68	19.80	2.75	20.39	2.83	21.02	2.90	21.66	2.98	22.34	3.06	23.05	3.15	7
8	21.91	2.64	22.55	2.71	23.22	2.79	23.92	2.86	24.64	2.94	25.40	3.02	26.20	3.10	8
9	24.55	2.62	25.26	2.68	26.01	2.75	26.78	2.82	27.58	2.90	28.42	2.97	29.30	3.05	9
10	27.17	2.57	27.94	2.65	28.76	2.71	29.60	2.78	30.48	2.84	31.39	2.92	32.35	2.99	10
11	29.74	2.55	30.59	2.60	31.47	2.66	32.38	2.73	33.32	2.80	34.31	2.86	35.34	2.92	11
12	32.29	2.51	33.19	2.57	34.13	2.62	35.11	2.68	36.12	2.74	37.17	2.80	38.26	2.87	12
13	34.80	2.46	35.76	2.52	36.75	2.58	37.79	2.63	38.86	2.69	39.97	2.74	41.13	2.79	13
14	37.26	2.43	38.28	2.48	39.33	2.53	40.42	2.58	41.55	2.62	42.71	2.68	43.92	2.73	14
15	39.69	2.39	40.76	2.43	41.86	2.48	43.00	2.52	44.17	2.57	45.39	2.62	46.65	2.66	15
16	42.08	2.34	43.19	2.38	44.34	2.42	45.52	2.47	46.74	2.52	48.01	2.55	49.31	2.60	16
17	44.42	2.30	45.57	2.34	46.76	2.38	47.99	2.42	49.26	2.45	50.56	2.49	51.91	2.52	17
18	46.72	2.26	47.91	2.29	49.14	2.33	50.41	2.36	51.71	2.40	53.05	2.43	54.43	2.46	18
19	48.98	2.21	50.20	2.25	51.47	2.28	52.77	2.31	54.11	2.33	55.48	2.37	56.89	2.40	19
20	51.19	2.17	52.45	2.20	53.75	2.22	55.08	2.25	56.44	2.28	57.85	2.30	59.29	2.33	20
21	53.36	2.12	54.65	2.15	55.97	2.18	57.33	2.20	58.72	2.22	60.15	2.24	61.62	2.26	21
22	55.48	2.08	56.80	2.10	58.15	2.12	59.53	2.15	60.94	2.17	62.39	2.19	63.88	2.20	22
23	57.56	2.04	58.90	2.06	60.27	2.08	61.68	2.09	63.11	2.11	64.58	2.12	66.08	2.14	23
24	59.60	1.99	60.96	2.01	62.35	2.03	63.77	2.04	65.22	2.05	66.70	2.07	68.22	2.08	24
25	61.59	1.95	62.97	1.97	64.38	1.98	65.81	1.99	67.27	2.01	68.77	2.01	70.30	2.02	25
26	63.54	1.91	64.94	1.92	66.36	1.93	67.80	1.95	69.28	1.95	70.78	1.96	72.32	1.96	26
27	65.45	1.87	66.86	1.88	68.29	1.89	69.75	1.89	71.23	1.91	72.74	1.91	74.28	1.91	27
28	67.32	1.83	68.74	1.83	70.18	1.84	71.64	1.85	73.14	1.85	74.65	1.86	76.19	1.86	28
29	69.15	1.78	70.57	1.79	72.02	1.80	73.49	1.81	74.99	1.81	76.51	1.80	78.05	1.80	29
30	70.93	1.75	72.36	1.76	73.82	1.76	75.30	1.76	76.80	1.76	78.31	1.76	79.85	1.76	30
31	72.68	1.71	74.12	1.71	75.58	1.71	77.06	1.72	78.56	1.71	80.07	1.72	81.61	1.71	31
32	74.39	1.68	75.83	1.68	77.29	1.68	78.78	1.67	80.27	1.68	81.79	1.67	83.32	1.66	32
33	76.07	1.63	77.51	1.63	78.97	1.64	80.45	1.63	81.95	1.63	83.46	1.62	84.98	1.62	33
34	77.70	1.60	79.14	1.61	80.61	1.60	82.08	1.60	83.58	1.59	85.08	1.59	86.60	1.58	34
35	79.30	1.57	80.75	1.56	82.21	1.56	83.68	1.56	85.17	1.55	86.67	1.54	88.18	1.54	35
36	80.87	1.53	82.31	1.53	83.77	1.53	85.24	1.52	86.72	1.52	88.21	1.51	89.72	1.50	36
37	82.40	1.50	83.84	1.50	85.30	1.49	86.76	1.49	88.24	1.47	89.72	1.47	91.22	1.46	37
38	83.90	1.48	85.34	1.47	86.79	1.46	88.25	1.45	89.71	1.45	91.19	1.43	92.68	1.42	38
39	85.38	1.43	86.81	1.43	88.25	1.42	89.70	1.42	91.16	1.41	92.62	1.40	94.10	1.39	39
40	86.81	1.41	88.24	1.40	89.67	1.40	91.12	1.38	92.57	1.37	94.02	1.37	95.49	1.35	40
41	88.22	1.39	89.64	1.38	91.07	1.37	92.50	1.36	93.94	1.35	95.39	1.34	96.84	1.32	41
42	89.61	1.35	91.02	1.34	92.44	1.33	93.86	1.33	95.29	1.32	96.73	1.30	98.16	1.30	42
43	90.96	1.32	92.36	1.32	93.77	1.31	95.19	1.30	96.61	1.28	98.03	1.27	99.46	1.26	43
44	92.28	1.30	93.68	1.29	95.08	1.28	96.49	1.27	97.89	1.26	99.30	1.25	100.72	1.23	44
45	93.58	1.28	94.97	1.27	96.36	1.25	97.76	1.24	99.15	1.23	100.55	1.22	101.95	1.21	45
46	94.86	1.25	96.24	1.24	97.61	1.23	99.00	1.22	100.38	1.21	101.77	1.19	103.16	1.18	46
47	96.11	1.22	97.48	1.21	98.84	1.21	100.22	1.19	101.59	1.18	102.96	1.17	104.34	1.15	47
48	97.33	1.20	98.69	1.19	100.05	1.18	101.41	1.17	102.77	1.15	104.13	1.14	105.49	1.13	48
49	98.53	1.19	99.88	1.17	101.23	1.16	102.58	1.14	103.92	1.14	105.27	1.12	106.62	1.10	49
50	99.72	1.16	101.05	1.15	102.39	1.13	103.72	1.12	105.06	1.11	106.39	1.10	107.72	1.08	50
51	100.88	1.13	102.20	1.13	103.52	1.12	104.84	1.11	106.17	1.08	107.49	1.07	108.80	1.06	51
52	102.01	1.12	103.33	1.10	104.64	1.09	105.95	1.08	107.25	1.07	108.56	1.05	109.86	1.04	52
53	103.13	1.10	104.43	1.08	105.73	1.07	107.03	1.06	108.32	1.05	109.61	1.03	110.90	1.02	53
54	104.23	1.07	105.51	1.07	106.80	1.05	108.09	1.04	109.37	1.02	110.64	1.02	111.92	1.00	54
55	105.30	1.06	106.58	1.05	107.85	1.04	109.13	1.02	110.39	1.01	111.66	0.99	112.92	0.98	55
56	106.36	1.04	107.63	1.03	108.89	1.01	110.15	1.00	111.40	0.99	112.65	0.98	113.90	0.96	56
57	107.40	1.02	108.66	1.01	109.90	1.00	111.15	0.98	112.39	0.97	113.63	0.95	114.86	0.94	57
58	108.42	1.01	109.67	0.99	110.90	0.98	112.13	0.97	113.36	0.96	114.58	0.94	115.80	0.92	58
59	109.43	0.99	110.66	0.98	111.88	0.97	113.10	0.95	114.32	0.93	115.52	0.93	116.72	0.91	59
60	110.42		111.64		112.85		114.05		115.25		116.45		117.63		60

M	e = .43		e = .44		e = .45		e = .46		e = .47		e = .48		e = .49		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60°	110.42	0.97	111.64	0.96	112.85	0.95	114.05	0.94	115.25	0.92	116.45	0.90	117.63	0.90	60°
61	111.39	0.96	112.60	0.94	113.80	0.93	114.99	0.92	116.17	0.91	117.35	0.90	118.53	0.88	61
62	112.35	0.94	113.54	0.93	114.73	0.92	115.91	0.90	117.08	0.89	118.25	0.87	119.41	0.86	62
63	113.29	0.93	114.47	0.92	115.65	0.90	116.81	0.89	117.97	0.88	119.12	0.87	120.27	0.85	63
64	114.22	0.92	115.39	0.90	116.55	0.89	117.70	0.88	118.85	0.86	119.99	0.85	121.12	0.83	64
65	115.14	0.90	116.29	0.89	117.44	0.87	118.58	0.86	119.71	0.85	120.84	0.83	121.95	0.82	65
66	116.04	0.89	117.18	0.88	118.31	0.87	119.44	0.85	120.56	0.84	121.67	0.82	122.77	0.81	66
67	116.93	0.87	118.06	0.86	119.18	0.85	120.29	0.84	121.40	0.82	122.49	0.81	123.58	0.80	67
68	117.80	0.86	118.92	0.85	120.03	0.83	121.13	0.82	122.22	0.81	123.30	0.80	124.38	0.78	68
69	118.66	0.86	119.77	0.83	120.86	0.83	121.95	0.81	123.03	0.80	124.10	0.79	125.16	0.78	69
70	119.52	0.83	120.60	0.83	121.69	0.81	122.76	0.80	123.83	0.78	124.89	0.77	125.94	0.76	70
71	120.35	0.83	121.43	0.82	122.50	0.80	123.56	0.79	124.61	0.78	125.66	0.76	126.70	0.74	71
72	121.18	0.82	122.25	0.80	123.30	0.79	124.35	0.78	125.39	0.76	126.42	0.75	127.44	0.74	72
73	122.00	0.80	123.05	0.79	124.09	0.78	125.13	0.76	126.15	0.76	127.17	0.75	128.18	0.73	73
74	122.80	0.79	123.84	0.78	124.87	0.77	125.89	0.76	126.91	0.74	127.92	0.73	128.91	0.72	74
75	123.59	0.79	124.62	0.77	125.64	0.76	126.65	0.75	127.65	0.74	128.65	0.72	129.63	0.71	75
76	124.38	0.77	125.39	0.77	126.40	0.75	127.40	0.73	128.39	0.72	129.37	0.71	130.34	0.70	76
77	125.15	0.77	126.16	0.75	127.15	0.74	128.13	0.73	129.11	0.72	130.08	0.70	131.04	0.69	77
78	125.92	0.75	126.91	0.74	127.89	0.73	128.86	0.72	129.83	0.70	130.78	0.70	131.73	0.68	78
79	126.67	0.75	127.65	0.73	128.62	0.72	129.58	0.71	130.53	0.70	131.48	0.68	132.41	0.67	79
80	127.42	0.74	128.38	0.73	129.34	0.71	130.29	0.70	131.23	0.69	132.16	0.68	133.08	0.67	80
81	128.16	0.72	129.11	0.72	130.05	0.71	130.99	0.70	131.92	0.68	132.84	0.66	133.75	0.65	81
82	128.88	0.72	129.83	0.71	130.76	0.70	131.69	0.68	132.60	0.67	133.50	0.66	134.40	0.65	82
83	129.60	0.72	130.54	0.70	131.46	0.68	132.37	0.67	133.27	0.67	134.16	0.66	135.05	0.64	83
84	130.32	0.70	131.24	0.69	132.14	0.68	133.04	0.67	133.94	0.65	134.82	0.64	135.69	0.63	84
85	131.02	0.70	131.93	0.68	132.82	0.68	133.71	0.66	134.59	0.65	135.46	0.64	136.32	0.63	85
86	131.72	0.69	132.61	0.68	133.50	0.66	134.37	0.66	135.24	0.64	136.10	0.63	136.95	0.62	86
87	132.41	0.68	133.29	0.67	134.16	0.66	135.03	0.64	135.88	0.64	136.73	0.62	137.57	0.61	87
88	133.09	0.67	133.96	0.66	134.82	0.65	135.67	0.64	136.52	0.63	137.35	0.62	138.18	0.60	88
89	133.76	0.67	134.62	0.66	135.47	0.65	136.31	0.64	137.15	0.62	137.97	0.61	138.78	0.60	89
90	134.43	0.66	135.28	0.65	136.12	0.63	136.95	0.62	137.77	0.61	138.58	0.60	139.38	0.59	90
91	135.09	0.65	135.93	0.64	136.75	0.64	137.57	0.62	138.38	0.61	139.18	0.60	139.97	0.59	91
92	135.74	0.65	136.57	0.64	137.39	0.62	138.19	0.62	138.99	0.60	139.78	0.59	140.56	0.58	92
93	136.39	0.64	137.21	0.63	138.01	0.62	138.81	0.60	139.59	0.60	140.37	0.59	141.14	0.58	93
94	137.03	0.64	137.84	0.62	138.63	0.61	139.41	0.61	140.19	0.59	140.96	0.58	141.72	0.57	94
95	137.67	0.63	138.46	0.62	139.24	0.61	140.02	0.59	140.78	0.59	141.54	0.57	142.29	0.56	95
96	138.30	0.62	139.08	0.61	139.85	0.60	140.61	0.59	141.37	0.58	142.11	0.57	142.85	0.56	96
97	138.92	0.62	139.69	0.61	140.45	0.60	141.20	0.59	141.95	0.57	142.68	0.56	143.41	0.55	97
98	139.54	0.61	140.30	0.60	141.05	0.59	141.79	0.58	142.52	0.57	143.24	0.56	143.96	0.55	98
99	140.15	0.61	140.90	0.59	141.64	0.58	142.37	0.57	143.09	0.56	143.80	0.56	144.51	0.54	99
100	140.76	0.60	141.49	0.60	142.22	0.58	142.94	0.57	143.65	0.56	144.36	0.54	145.05	0.54	100
101	141.36	0.60	142.09	0.58	142.80	0.58	143.51	0.57	144.21	0.56	144.90	0.55	145.59	0.53	101
102	141.96	0.59	142.67	0.58	143.38	0.57	144.08	0.56	144.77	0.55	145.45	0.54	146.12	0.53	102
103	142.55	0.59	143.25	0.58	143.95	0.57	144.64	0.55	145.32	0.54	145.99	0.53	146.65	0.53	103
104	143.14	0.58	143.83	0.57	144.52	0.56	145.19	0.55	145.86	0.54	146.52	0.53	147.18	0.52	104
105	143.72	0.58	144.40	0.57	145.08	0.55	145.74	0.55	146.40	0.54	147.05	0.53	147.70	0.51	105
106	144.30	0.57	144.97	0.56	145.63	0.56	146.29	0.54	146.94	0.53	147.58	0.52	148.21	0.51	106
107	144.87	0.57	145.53	0.56	146.19	0.55	146.83	0.54	147.47	0.53	148.10	0.52	148.72	0.51	107
108	145.44	0.56	146.09	0.56	146.74	0.54	147.37	0.53	148.00	0.52	148.62	0.51	149.23	0.51	108
109	146.00	0.56	146.65	0.55	147.28	0.54	147.90	0.53	148.52	0.52	149.13	0.51	149.74	0.50	109
110	146.56	0.56	147.20	0.54	147.82	0.53	148.43	0.53	149.04	0.52	149.64	0.51	150.24	0.49	110
111	147.12	0.55	147.74	0.54	148.35	0.54	148.96	0.52	149.56	0.51	150.15	0.50	150.73	0.50	111
112	147.67	0.55	148.28	0.54	148.89	0.53	149.48	0.52	150.07	0.51	150.65	0.50	151.23	0.49	112
113	148.22	0.55	148.82	0.54	149.42	0.52	150.00	0.52	150.58	0.51	151.15	0.50	151.72	0.48	113
114	148.77	0.54	149.36	0.53	149.94	0.52	150.52	0.51	151.09	0.50	151.65	0.49	152.20	0.48	114
115	149.31	0.54	149.89	0.53	150.46	0.52	151.03	0.51	151.59	0.50	152.14	0.49	152.68	0.48	115
116	149.85	0.53	150.42	0.52	150.98	0.52	151.54	0.50	152.09	0.49	152.63	0.49	153.16	0.48	116
117	150.38	0.53	150.94	0.52	151.50	0.51	152.04	0.50	152.58	0.50	153.12	0.48	153.64	0.47	117
118	150.91	0.53	151.46	0.52	152.01	0.51	152.54	0.50	153.08	0.48	153.60	0.48	154.11	0.47	118
119	151.44	0.52	151.98	0.52	152.52	0.50	153.04	0.50	153.56	0.49	154.08	0.47	154.58	0.47	119
120	151.96		152.50		153.02		153.54		154.05		154.55		155.05		120

M	$e = .43$		$e = .44$		$e = .45$		$e = .46$		$e = .47$		$e = .48$		$e = .49$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	151.96	0.53	152.50	0.51	153.02	0.50	153.54	0.49	154.05	0.48	154.55	0.48	155.05	0.47	120°
121	152.49	0.51	153.01	0.51	153.52	0.50	154.03	0.49	154.53	0.48	155.03	0.47	155.52	0.46	121
122	153.00	0.52	153.52	0.50	154.02	0.50	154.52	0.49	155.01	0.48	155.50	0.47	155.98	0.46	122
123	153.52	0.51	154.02	0.51	154.52	0.49	155.01	0.48	155.49	0.48	155.97	0.46	156.44	0.46	123
124	154.03	0.51	154.53	0.50	155.01	0.49	155.49	0.48	155.97	0.47	156.43	0.47	156.90	0.45	124
125	154.54	0.51	155.03	0.50	155.50	0.49	155.97	0.48	156.44	0.47	156.90	0.46	157.35	0.45	125
126	155.05	0.50	155.53	0.49	155.99	0.49	156.45	0.48	156.91	0.47	157.36	0.46	157.80	0.45	126
127	155.55	0.51	156.02	0.49	156.48	0.48	156.93	0.47	157.38	0.46	157.82	0.45	158.25	0.45	127
128	156.06	0.50	156.51	0.49	156.96	0.48	157.40	0.48	157.84	0.46	158.27	0.46	158.70	0.44	128
129	156.56	0.50	157.00	0.49	157.44	0.48	157.88	0.46	158.30	0.46	158.73	0.45	159.14	0.45	129
130	157.06	0.49	157.49	0.49	157.92	0.48	158.34	0.47	158.76	0.46	159.18	0.45	159.59	0.44	130
131	157.55	0.49	157.98	0.48	158.40	0.47	158.81	0.47	159.22	0.46	159.63	0.44	160.03	0.43	131
132	158.04	0.49	158.46	0.48	158.87	0.47	159.28	0.46	159.68	0.45	160.07	0.45	160.46	0.44	132
133	158.53	0.49	158.94	0.48	159.34	0.47	159.74	0.46	160.13	0.45	160.52	0.44	160.90	0.43	133
134	159.02	0.49	159.42	0.47	159.81	0.47	160.20	0.46	160.58	0.45	160.96	0.44	161.33	0.44	134
135	159.51	0.48	159.89	0.48	160.28	0.46	160.66	0.45	161.03	0.45	161.40	0.44	161.77	0.43	135
136	159.99	0.48	160.37	0.47	160.74	0.47	161.11	0.46	161.48	0.45	161.84	0.44	162.20	0.43	136
137	160.47	0.48	160.84	0.47	161.21	0.46	161.57	0.45	161.93	0.44	162.28	0.43	162.63	0.42	137
138	160.95	0.48	161.31	0.47	161.67	0.46	162.02	0.45	162.37	0.44	162.71	0.44	163.05	0.43	138
139	161.43	0.47	161.78	0.47	162.13	0.46	162.47	0.45	162.81	0.44	163.15	0.43	163.48	0.42	139
140	161.90	0.48	162.25	0.46	162.59	0.45	162.92	0.45	163.25	0.44	163.58	0.43	163.90	0.42	140
141	162.38	0.47	162.71	0.47	163.04	0.46	163.37	0.45	163.69	0.44	164.01	0.43	164.32	0.42	141
142	162.85	0.47	163.18	0.46	163.50	0.45	163.82	0.44	164.13	0.44	164.44	0.43	164.74	0.42	142
143	163.32	0.47	163.64	0.46	163.95	0.45	164.26	0.44	164.57	0.43	164.87	0.42	165.16	0.42	143
144	163.79	0.47	164.10	0.46	164.40	0.45	164.70	0.44	165.00	0.43	165.29	0.43	165.58	0.42	144
145	164.26	0.46	164.56	0.46	164.85	0.45	165.14	0.44	165.43	0.43	165.72	0.42	166.00	0.41	145
146	164.72	0.47	165.02	0.45	165.30	0.45	165.58	0.44	165.86	0.43	166.14	0.42	166.41	0.42	146
147	165.19	0.46	165.47	0.46	165.75	0.45	166.02	0.44	166.29	0.43	166.56	0.42	166.83	0.41	147
148	165.65	0.46	165.93	0.45	166.20	0.44	166.46	0.44	166.72	0.43	166.98	0.42	167.24	0.41	148
149	166.11	0.46	166.38	0.45	166.64	0.44	166.90	0.43	167.15	0.43	167.40	0.42	167.65	0.41	149
150	166.57	0.46	166.83	0.45	167.08	0.44	167.33	0.43	167.58	0.42	167.82	0.42	168.06	0.41	150
151	167.03	0.46	167.28	0.45	167.52	0.44	167.76	0.43	168.00	0.43	168.24	0.41	168.47	0.40	151
152	167.49	0.46	167.73	0.45	167.96	0.44	168.20	0.43	168.43	0.42	168.65	0.42	168.87	0.41	152
153	167.95	0.45	168.18	0.45	168.40	0.44	168.63	0.43	168.85	0.42	169.07	0.41	169.28	0.41	153
154	168.40	0.46	168.63	0.44	168.84	0.44	169.06	0.43	169.27	0.42	169.48	0.41	169.69	0.40	154
155	168.86	0.45	169.07	0.45	169.28	0.44	169.49	0.43	169.69	0.42	169.89	0.41	170.09	0.40	155
156	169.31	0.45	169.52	0.44	169.72	0.43	169.92	0.42	170.11	0.42	170.30	0.41	170.49	0.41	156
157	169.76	0.46	169.96	0.44	170.15	0.44	170.34	0.43	170.53	0.42	170.71	0.41	170.90	0.40	157
158	170.22	0.45	170.40	0.45	170.59	0.43	170.77	0.42	170.95	0.41	171.12	0.41	171.30	0.40	158
159	170.67	0.45	170.85	0.44	171.02	0.43	171.19	0.43	171.36	0.42	171.53	0.41	171.70	0.40	159
160	171.12	0.45	171.29	0.44	171.45	0.44	171.62	0.42	171.78	0.42	171.94	0.41	172.10	0.40	160
161	171.57	0.44	171.73	0.44	171.89	0.43	172.04	0.43	172.20	0.41	172.35	0.41	172.50	0.40	161
162	172.01	0.45	172.17	0.44	172.32	0.43	172.47	0.42	172.61	0.42	172.76	0.40	172.90	0.40	162
163	172.46	0.45	172.61	0.43	172.75	0.43	172.89	0.42	173.03	0.41	173.16	0.41	173.30	0.39	163
164	172.91	0.45	173.04	0.44	173.18	0.43	173.31	0.42	173.44	0.41	173.57	0.40	173.69	0.40	164
165	173.36	0.44	173.48	0.44	173.61	0.43	173.73	0.42	173.85	0.41	173.97	0.41	174.09	0.40	165
166	173.80	0.45	173.92	0.44	174.04	0.42	174.15	0.42	174.26	0.42	174.38	0.40	174.49	0.39	166
167	174.25	0.44	174.36	0.43	174.46	0.43	174.57	0.42	174.68	0.41	174.78	0.40	174.88	0.40	167
168	174.69	0.44	174.79	0.44	174.89	0.43	174.99	0.42	175.09	0.41	175.18	0.40	175.28	0.39	168
169	175.13	0.45	175.23	0.43	175.32	0.43	175.41	0.42	175.50	0.41	175.59	0.40	175.67	0.40	169
170	175.58	0.44	175.66	0.44	175.75	0.42	175.83	0.42	175.91	0.41	175.99	0.40	176.07	0.39	170
171	176.02	0.44	176.10	0.43	176.17	0.43	176.25	0.41	176.32	0.41	176.39	0.40	176.46	0.40	171
172	176.46	0.45	176.53	0.44	176.60	0.42	176.66	0.42	176.73	0.41	176.79	0.40	176.86	0.39	172
173	176.91	0.44	176.97	0.43	177.02	0.43	177.08	0.42	177.14	0.41	177.19	0.40	177.25	0.39	173
174	177.35	0.44	177.40	0.43	177.45	0.43	177.50	0.42	177.55	0.41	177.60	0.40	177.64	0.40	174
175	177.79	0.44	177.83	0.44	177.88	0.42	177.92	0.41	177.96	0.41	178.00	0.40	178.04	0.39	175
176	178.23	0.45	178.27	0.43	178.30	0.43	178.33	0.42	178.37	0.40	178.40	0.40	178.43	0.39	176
177	178.68	0.44	178.70	0.43	178.73	0.42	178.75	0.42	178.77	0.41	178.80	0.40	178.82	0.39	177
178	179.12	0.44	179.13	0.44	179.15	0.43	179.17	0.41	179.18	0.41	179.20	0.40	179.21	0.40	178
179	179.56	0.44	179.57	0.43	179.58	0.42	179.58	0.42	179.59	0.41	179.60	0.40	179.61	0.39	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .50$		$e = .51$		$e = .52$		$e = .53$		$e = .54$		$e = .55$		$e = .56$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
0	0.00	3.46	0.00	3.58	0.00	3.71	0.00	3.84	0.00	3.97	0.00	4.12	0.00	4.28	0
1	3.46	3.46	3.58	3.57	3.71	3.69	3.84	3.82	3.97	3.97	4.12	4.11	4.28	4.26	1
2	6.92	3.43	7.15	3.55	7.40	3.68	7.66	3.80	7.94	3.94	8.23	4.07	8.54	4.22	2
3	10.35	3.42	10.70	3.53	11.08	3.64	11.46	3.77	11.88	3.89	12.30	4.04	12.76	4.18	3
4	13.77	3.38	14.23	3.49	14.72	3.60	15.23	3.72	15.77	3.85	16.34	3.97	16.94	4.11	4
5	17.15	3.34	17.72	3.44	18.32	3.56	18.95	3.67	19.62	3.78	20.31	3.91	21.05	4.04	5
6	20.49	3.30	21.16	3.40	21.88	3.49	22.62	3.60	23.40	3.72	24.22	3.83	25.09	3.95	6
7	23.79	3.24	24.56	3.34	25.37	3.44	26.22	3.53	27.12	3.63	28.05	3.75	29.04	3.85	7
8	27.03	3.19	27.90	3.27	28.81	3.36	29.75	3.46	30.75	3.55	31.80	3.65	32.89	3.75	8
9	30.22	3.12	31.17	3.21	32.17	3.29	33.21	3.38	34.30	3.46	35.45	3.54	36.64	3.64	9
10	33.34	3.06	34.38	3.14	35.46	3.21	36.59	3.29	37.76	3.37	38.99	3.45	40.28	3.52	10
11	36.40	3.00	37.52	3.06	38.67	3.13	39.88	3.20	41.13	3.27	42.44	3.34	43.80	3.41	11
12	39.40	2.92	40.58	2.98	41.80	3.05	43.08	3.11	44.40	3.17	45.78	3.23	47.21	3.29	12
13	42.32	2.85	43.56	2.91	44.85	2.97	46.19	3.02	47.57	3.08	49.01	3.13	50.50	3.18	13
14	45.17	2.78	46.47	2.83	47.82	2.87	49.21	2.92	50.65	2.97	52.14	3.02	53.68	3.06	14
15	47.95	2.71	49.30	2.75	50.69	2.80	52.13	2.84	53.62	2.87	55.16	2.91	56.74	2.95	15
16	50.66	2.64	52.05	2.67	53.49	2.71	54.97	2.74	56.49	2.78	58.07	2.81	59.69	2.84	16
17	53.30	2.56	54.72	2.60	56.20	2.62	57.71	2.66	59.27	2.69	60.88	2.70	62.53	2.73	17
18	55.86	2.48	57.32	2.52	58.82	2.55	60.37	2.57	61.96	2.59	63.58	2.62	65.26	2.63	18
19	58.34	2.42	59.84	2.44	61.37	2.46	62.94	2.48	64.55	2.50	66.20	2.51	67.89	2.53	19
20	60.76	2.35	62.28	2.37	63.83	2.39	65.42	2.40	67.05	2.41	68.71	2.43	70.42	2.43	20
21	63.11	2.28	64.65	2.30	66.22	2.31	67.82	2.33	69.46	2.33	71.14	2.34	72.85	2.34	21
22	65.39	2.22	66.95	2.22	68.53	2.24	70.15	2.24	71.79	2.26	73.48	2.25	75.19	2.26	22
23	67.61	2.15	69.17	2.16	70.77	2.16	72.39	2.17	74.05	2.17	75.73	2.18	77.45	2.17	23
24	69.76	2.09	71.33	2.09	72.93	2.10	74.56	2.10	76.22	2.10	77.91	2.09	79.62	2.09	24
25	71.85	2.02	73.42	2.03	75.03	2.03	76.66	2.03	78.32	2.03	80.00	2.03	81.71	2.02	25
26	73.87	1.97	75.45	1.97	77.06	1.97	78.69	1.97	80.35	1.96	82.03	1.95	83.73	1.94	26
27	75.84	1.91	77.42	1.91	79.03	1.91	80.66	1.90	82.31	1.90	83.98	1.89	85.67	1.88	27
28	77.75	1.86	79.33	1.86	80.94	1.85	82.56	1.85	84.21	1.83	85.87	1.82	87.55	1.81	28
29	79.61	1.80	81.19	1.80	82.79	1.79	84.41	1.78	86.04	1.78	87.69	1.77	89.36	1.75	29
30	81.41	1.75	82.99	1.75	84.58	1.74	86.19	1.73	87.82	1.72	89.46	1.70	91.11	1.69	30
31	83.16	1.71	84.74	1.69	86.32	1.69	87.92	1.68	89.54	1.66	91.16	1.66	92.80	1.64	31
32	84.87	1.66	86.43	1.65	88.01	1.64	89.60	1.63	91.20	1.62	92.82	1.59	94.44	1.58	32
33	86.53	1.61	88.08	1.60	89.65	1.59	91.23	1.58	92.82	1.56	94.41	1.55	96.02	1.53	33
34	88.14	1.57	89.68	1.56	91.24	1.55	92.81	1.53	94.38	1.52	95.96	1.51	97.55	1.49	34
35	89.71	1.52	91.24	1.52	92.79	1.50	94.34	1.49	95.90	1.47	97.47	1.45	99.04	1.44	35
36	91.23	1.49	92.76	1.47	94.29	1.46	95.83	1.45	97.37	1.44	98.92	1.42	100.48	1.40	36
37	92.72	1.45	94.23	1.44	95.75	1.42	97.28	1.40	98.81	1.39	100.34	1.38	101.88	1.35	37
38	94.17	1.41	95.67	1.40	97.17	1.38	98.68	1.37	100.20	1.35	101.72	1.33	103.23	1.32	38
39	95.58	1.38	97.07	1.36	98.55	1.35	100.05	1.33	101.55	1.32	103.05	1.30	104.55	1.28	39
40	96.96	1.34	98.43	1.33	99.90	1.32	101.38	1.30	102.87	1.28	104.35	1.26	105.83	1.25	40
41	98.30	1.31	99.76	1.29	101.22	1.28	102.68	1.27	104.15	1.24	105.61	1.23	107.08	1.21	41
42	99.61	1.28	101.05	1.27	102.50	1.25	103.95	1.23	105.39	1.22	106.84	1.20	108.29	1.18	42
43	100.89	1.24	102.32	1.23	103.75	1.21	105.18	1.20	106.61	1.18	108.04	1.16	109.47	1.15	43
44	102.13	1.22	103.55	1.20	104.96	1.19	106.38	1.17	107.79	1.16	109.20	1.14	110.62	1.11	44
45	103.35	1.19	104.75	1.18	106.15	1.16	107.55	1.14	108.95	1.12	110.34	1.11	111.73	1.10	45
46	104.54	1.17	105.93	1.15	107.31	1.14	108.69	1.12	110.07	1.10	111.45	1.08	112.83	1.06	46
47	105.71	1.14	107.08	1.12	108.45	1.10	109.81	1.09	111.17	1.08	112.53	1.06	113.89	1.04	47
48	106.85	1.11	108.20	1.10	109.55	1.09	110.90	1.07	112.25	1.05	113.59	1.03	114.93	1.01	48
49	107.96	1.09	109.30	1.07	110.64	1.05	111.97	1.04	113.30	1.02	114.62	1.01	115.94	0.99	49
50	109.05	1.07	110.37	1.05	111.69	1.04	113.01	1.02	114.32	1.01	115.63	0.99	116.93	0.97	50
51	110.12	1.04	111.42	1.03	112.73	1.01	114.03	1.00	115.33	0.98	116.62	0.96	117.90	0.95	51
52	111.16	1.02	112.45	1.01	113.74	1.00	115.03	0.97	116.31	0.96	117.58	0.94	118.85	0.93	52
53	112.18	1.01	113.46	0.99	114.74	0.97	116.00	0.96	117.27	0.94	118.52	0.93	119.78	0.90	53
54	113.19	0.98	114.45	0.97	115.71	0.95	116.96	0.94	118.21	0.92	119.45	0.90	120.68	0.89	54
55	114.17	0.96	115.42	0.95	116.66	0.93	117.90	0.92	119.13	0.90	120.35	0.89	121.57	0.87	55
56	115.13	0.95	116.37	0.93	117.59	0.92	118.82	0.90	120.03	0.88	121.24	0.87	122.44	0.85	56
57	116.08	0.93	117.30	0.91	118.51	0.90	119.72	0.88	120.91	0.87	122.11	0.85	123.29	0.84	57
58	117.01	0.91	118.21	0.90	119.41	0.88	120.60	0.87	121.78	0.85	122.96	0.83	124.13	0.82	58
59	117.92	0.90	119.11	0.88	120.29	0.87	121.47	0.85	122.63	0.84	123.79	0.82	124.95	0.80	59
60	118.82		119.99		121.16		122.32		123.47		124.61		125.75		60

M	$e = .50$		$e = .51$		$e = .52$		$e = .53$		$e = .54$		$e = .55$		$e = .56$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60°	118.82	0.87	119.99	0.86	121.16	0.84	122.32	0.83	123.47	0.82	124.61	0.81	125.75	0.79	60°
61	119.69	0.87	120.85	0.85	122.00	0.84	123.15	0.82	124.29	0.80	125.42	0.79	126.54	0.77	61
62	120.56	0.85	121.70	0.84	122.84	0.82	123.97	0.80	125.09	0.79	126.21	0.77	127.31	0.76	62
63	121.41	0.83	122.54	0.82	123.66	0.81	124.77	0.80	125.88	0.78	126.98	0.76	128.07	0.75	63
64	122.24	0.82	123.36	0.81	124.47	0.79	125.57	0.78	126.66	0.76	127.74	0.75	128.82	0.73	64
65	123.06	0.81	124.17	0.79	125.26	0.78	126.35	0.76	127.42	0.75	128.49	0.74	129.55	0.73	65
66	123.87	0.80	124.96	0.78	126.04	0.77	127.11	0.75	128.17	0.74	129.23	0.72	130.28	0.71	66
67	124.67	0.78	125.74	0.77	126.81	0.75	127.86	0.74	128.91	0.73	129.95	0.71	130.99	0.69	67
68	125.45	0.77	126.51	0.75	127.56	0.74	128.60	0.73	129.64	0.71	130.66	0.71	131.68	0.69	68
69	126.22	0.76	127.26	0.75	128.30	0.73	129.33	0.72	130.35	0.71	131.37	0.69	132.37	0.68	69
70	126.98	0.74	128.01	0.73	129.03	0.72	130.05	0.71	131.06	0.69	132.06	0.68	133.05	0.66	70
71	127.72	0.74	128.74	0.72	129.75	0.71	130.76	0.69	131.75	0.68	132.74	0.66	133.71	0.66	71
72	128.46	0.72	129.46	0.72	130.46	0.70	131.45	0.69	132.43	0.67	133.40	0.66	134.37	0.65	72
73	129.18	0.72	130.18	0.70	131.16	0.69	132.14	0.67	133.10	0.67	134.06	0.65	135.02	0.63	73
74	129.90	0.71	130.88	0.69	131.85	0.68	132.81	0.67	133.77	0.65	134.71	0.64	135.65	0.63	74
75	130.61	0.69	131.57	0.69	132.53	0.67	133.48	0.66	134.42	0.64	135.35	0.64	136.28	0.62	75
76	131.30	0.69	132.26	0.67	133.20	0.66	134.14	0.65	135.06	0.64	135.99	0.62	136.90	0.61	76
77	131.99	0.68	132.93	0.66	133.86	0.65	134.79	0.64	135.70	0.63	136.61	0.61	137.51	0.60	77
78	132.67	0.66	133.59	0.66	134.51	0.65	135.43	0.63	136.33	0.62	137.22	0.61	138.11	0.59	78
79	133.33	0.66	134.25	0.65	135.16	0.63	136.06	0.62	136.95	0.61	137.83	0.60	138.70	0.59	79
80	133.99	0.66	134.90	0.64	135.79	0.63	136.68	0.62	137.56	0.60	138.43	0.59	139.29	0.58	80
81	134.65	0.64	135.54	0.63	136.42	0.62	137.30	0.60	138.16	0.60	139.02	0.58	139.87	0.57	81
82	135.29	0.64	136.17	0.62	137.04	0.61	137.90	0.60	138.76	0.59	139.60	0.58	140.44	0.56	82
83	135.93	0.62	136.79	0.62	137.65	0.61	138.50	0.60	139.35	0.58	140.18	0.57	141.00	0.56	83
84	136.55	0.62	137.41	0.61	138.26	0.59	139.10	0.58	139.93	0.57	140.75	0.56	141.56	0.55	84
85	137.17	0.62	138.02	0.60	138.85	0.59	139.68	0.58	140.50	0.57	141.31	0.56	142.11	0.55	85
86	137.79	0.61	138.62	0.60	139.44	0.59	140.26	0.57	141.07	0.56	141.87	0.55	142.66	0.54	86
87	138.40	0.60	139.22	0.59	140.03	0.58	140.83	0.57	141.63	0.55	142.42	0.54	143.20	0.53	87
88	139.00	0.59	139.81	0.58	140.61	0.57	141.40	0.56	142.18	0.55	142.96	0.54	143.73	0.52	88
89	139.59	0.59	140.39	0.57	141.18	0.56	141.96	0.55	142.73	0.54	143.50	0.53	144.25	0.52	89
90	140.18	0.58	140.96	0.57	141.74	0.56	142.51	0.55	143.27	0.54	144.03	0.52	144.77	0.52	90
91	140.76	0.57	141.53	0.57	142.30	0.55	143.06	0.54	143.81	0.53	144.55	0.52	145.29	0.51	91
92	141.33	0.57	142.10	0.56	142.85	0.55	143.60	0.54	144.34	0.53	145.07	0.52	145.80	0.50	92
93	141.90	0.57	142.66	0.55	143.40	0.54	144.14	0.53	144.87	0.52	145.59	0.51	146.30	0.50	93
94	142.47	0.56	143.21	0.55	143.94	0.54	144.67	0.52	145.39	0.51	146.10	0.50	146.80	0.50	94
95	143.03	0.55	143.76	0.54	144.48	0.53	145.19	0.53	145.90	0.51	146.60	0.50	147.30	0.49	95
96	143.58	0.55	144.30	0.53	145.01	0.53	145.72	0.51	146.41	0.51	147.10	0.50	147.79	0.48	96
97	144.13	0.54	144.83	0.54	145.54	0.52	146.23	0.51	146.92	0.50	147.60	0.49	148.27	0.48	97
98	144.67	0.53	145.37	0.52	146.06	0.51	146.74	0.51	147.42	0.49	148.09	0.48	148.75	0.48	98
99	145.20	0.54	145.89	0.52	146.57	0.52	147.25	0.50	147.91	0.49	148.57	0.48	149.23	0.47	99
100	145.74	0.52	146.41	0.52	147.09	0.50	147.75	0.50	148.40	0.49	149.05	0.48	149.70	0.46	100
101	146.26	0.53	146.93	0.52	147.59	0.51	148.25	0.49	148.89	0.49	149.53	0.47	150.16	0.47	101
102	146.79	0.52	147.45	0.50	148.10	0.50	148.74	0.49	149.38	0.47	150.00	0.47	150.63	0.46	102
103	147.31	0.51	147.95	0.51	148.60	0.49	149.23	0.48	149.85	0.48	150.47	0.47	151.09	0.45	103
104	147.82	0.51	148.46	0.50	149.09	0.49	149.71	0.48	150.33	0.47	150.94	0.46	151.54	0.45	104
105	148.33	0.51	148.96	0.49	149.58	0.49	150.19	0.48	150.80	0.47	151.40	0.46	151.99	0.45	105
106	148.84	0.50	149.45	0.50	150.07	0.48	150.67	0.47	151.27	0.46	151.86	0.45	152.44	0.44	106
107	149.34	0.50	149.95	0.49	150.55	0.48	151.14	0.47	151.73	0.46	152.31	0.45	152.88	0.44	107
108	149.84	0.49	150.44	0.48	151.03	0.47	151.61	0.47	152.19	0.45	152.76	0.45	153.32	0.44	108
109	150.33	0.49	150.92	0.48	151.50	0.47	152.08	0.46	152.64	0.46	153.21	0.44	153.76	0.44	109
110	150.82	0.49	151.40	0.48	151.97	0.47	152.54	0.46	153.10	0.45	153.65	0.44	154.20	0.43	110
111	151.31	0.48	151.88	0.47	152.44	0.47	153.00	0.45	153.55	0.44	154.09	0.44	154.63	0.43	111
112	151.79	0.48	152.35	0.47	152.91	0.46	153.45	0.45	153.99	0.44	154.53	0.43	155.06	0.42	112
113	152.27	0.48	152.82	0.47	153.37	0.45	153.90	0.45	154.43	0.44	154.96	0.43	155.48	0.42	113
114	152.75	0.47	153.29	0.47	153.82	0.46	154.35	0.45	154.87	0.44	155.39	0.43	155.90	0.42	114
115	153.22	0.47	153.76	0.46	154.28	0.45	154.80	0.44	155.31	0.44	155.82	0.42	156.32	0.42	115
116	153.69	0.47	154.22	0.45	154.73	0.45	155.24	0.44	155.75	0.43	156.24	0.42	156.74	0.41	116
117	154.16	0.46	154.67	0.46	155.18	0.45	155.68	0.44	156.18	0.42	156.66	0.42	157.15	0.41	117
118	154.62	0.46	155.13	0.45	155.63	0.44	156.12	0.43	156.60	0.43	157.08	0.42	157.56	0.41	118
119	155.08	0.46	155.58	0.45	156.07	0.44	156.55	0.43	157.03	0.42	157.50	0.41	157.97	0.40	119
120	155.54		156.03		156.51		156.98		157.45		157.91		158.37		120

M	$e = .50$		$e = .51$		$e = .52$		$e = .53$		$e = .54$		$e = .55$		$e = .56$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	155.54	0.46	156.03	0.45	156.51	0.44	156.98	0.43	157.45	0.42	157.91	0.42	158.37	0.41	120°
121	156.00	0.45	156.48	0.44	156.95	0.43	157.41	0.43	157.87	0.42	158.33	0.41	158.78	0.40	121
122	156.45	0.45	156.92	0.44	157.38	0.43	157.84	0.42	158.29	0.41	158.74	0.40	159.18	0.39	122
123	156.90	0.45	157.36	0.44	157.81	0.43	158.26	0.42	158.70	0.42	159.14	0.41	159.57	0.40	123
124	157.35	0.44	157.80	0.44	158.24	0.43	158.68	0.42	159.12	0.41	159.55	0.40	159.97	0.39	124
125	157.79	0.45	158.24	0.43	158.67	0.43	159.10	0.42	159.53	0.41	159.95	0.40	160.36	0.40	125
126	158.24	0.44	158.67	0.43	159.10	0.42	159.52	0.41	159.94	0.40	160.35	0.40	160.76	0.39	126
127	158.68	0.44	159.10	0.43	159.52	0.42	159.93	0.42	160.34	0.41	160.75	0.39	161.15	0.38	127
128	159.12	0.43	159.53	0.43	159.94	0.42	160.35	0.41	160.75	0.40	161.14	0.40	161.53	0.39	128
129	159.55	0.44	159.96	0.43	160.36	0.42	160.76	0.41	161.15	0.40	161.54	0.39	161.92	0.38	129
130	159.99	0.43	160.39	0.42	160.78	0.41	161.17	0.40	161.55	0.40	161.93	0.39	162.30	0.38	130
131	160.42	0.43	160.81	0.42	161.19	0.42	161.57	0.41	161.95	0.39	162.32	0.39	162.68	0.38	131
132	160.85	0.43	161.23	0.42	161.61	0.41	161.98	0.40	162.34	0.40	162.71	0.38	163.06	0.38	132
133	161.28	0.43	161.65	0.42	162.02	0.41	162.38	0.40	162.74	0.39	163.09	0.39	163.44	0.38	133
134	161.70	0.43	162.07	0.41	162.43	0.40	162.78	0.40	163.13	0.39	163.48	0.38	163.82	0.37	134
135	162.13	0.42	162.48	0.42	162.83	0.41	163.18	0.40	163.52	0.39	163.86	0.38	164.19	0.38	135
136	162.55	0.42	162.90	0.41	163.24	0.40	163.58	0.39	163.91	0.39	164.24	0.38	164.57	0.37	136
137	162.97	0.42	163.31	0.41	163.64	0.40	163.97	0.40	164.30	0.38	164.62	0.38	164.94	0.37	137
138	163.39	0.41	163.72	0.41	164.04	0.40	164.37	0.39	164.68	0.39	165.00	0.37	165.31	0.37	138
139	163.80	0.42	164.13	0.40	164.44	0.40	164.76	0.39	165.07	0.38	165.37	0.38	165.68	0.36	139
140	164.22	0.41	164.53	0.41	164.84	0.40	165.15	0.39	165.45	0.38	165.75	0.37	166.04	0.37	140
141	164.63	0.42	164.94	0.40	165.24	0.40	165.54	0.39	165.83	0.38	166.12	0.38	166.41	0.37	141
142	165.05	0.41	165.34	0.41	165.64	0.39	165.93	0.38	166.21	0.38	166.50	0.37	166.78	0.36	142
143	165.46	0.41	165.75	0.40	166.03	0.39	166.31	0.39	166.59	0.38	166.87	0.37	167.14	0.36	143
144	165.87	0.40	166.15	0.40	166.42	0.40	166.70	0.38	166.97	0.37	167.24	0.36	167.50	0.36	144
145	166.27	0.41	166.55	0.39	166.82	0.39	167.08	0.38	167.34	0.38	167.60	0.37	167.86	0.36	145
146	166.68	0.41	166.94	0.40	167.21	0.39	167.46	0.39	167.72	0.37	167.97	0.37	168.22	0.36	146
147	167.09	0.40	167.34	0.40	167.60	0.38	167.85	0.38	168.09	0.37	168.34	0.36	168.58	0.36	147
148	167.49	0.40	167.74	0.39	167.98	0.39	168.23	0.38	168.46	0.38	168.70	0.37	168.94	0.35	148
149	167.89	0.40	168.13	0.40	168.37	0.39	168.61	0.37	168.84	0.37	169.07	0.36	169.29	0.36	149
150	168.29	0.40	168.53	0.39	168.76	0.38	168.98	0.38	169.21	0.37	169.43	0.36	169.65	0.35	150
151	168.69	0.40	168.92	0.39	169.14	0.38	169.36	0.38	169.58	0.36	169.79	0.36	170.00	0.35	151
152	169.09	0.40	169.31	0.39	169.52	0.39	169.74	0.37	169.94	0.37	170.15	0.36	170.35	0.36	152
153	169.49	0.40	169.70	0.39	169.91	0.38	170.11	0.37	170.31	0.37	170.51	0.36	170.71	0.35	153
154	169.89	0.40	170.09	0.39	170.29	0.38	170.48	0.37	170.68	0.36	170.87	0.36	171.06	0.35	154
155	170.29	0.39	170.48	0.39	170.67	0.38	170.86	0.37	171.04	0.37	171.23	0.35	171.41	0.35	155
156	170.68	0.40	170.87	0.38	171.05	0.38	171.23	0.37	171.41	0.36	171.58	0.36	171.76	0.35	156
157	171.08	0.39	171.25	0.39	171.43	0.38	171.60	0.37	171.77	0.36	171.94	0.36	172.11	0.35	157
158	171.47	0.39	171.64	0.38	171.81	0.37	171.97	0.37	172.13	0.37	172.30	0.35	172.46	0.34	158
159	171.86	0.40	172.02	0.39	172.18	0.38	172.34	0.37	172.50	0.36	172.65	0.36	172.80	0.35	159
160	172.26	0.39	172.41	0.38	172.56	0.38	172.71	0.37	172.86	0.36	173.01	0.35	173.15	0.35	160
161	172.65	0.39	172.79	0.39	172.94	0.37	173.08	0.37	173.22	0.36	173.36	0.35	173.50	0.34	161
162	173.04	0.39	173.18	0.38	173.31	0.38	173.45	0.37	173.58	0.36	173.71	0.35	173.84	0.35	162
163	173.43	0.39	173.56	0.38	173.69	0.37	173.82	0.36	173.94	0.36	174.06	0.36	174.19	0.34	163
164	173.82	0.39	173.94	0.38	174.06	0.38	174.18	0.37	174.30	0.36	174.42	0.35	174.53	0.35	164
165	174.21	0.39	174.32	0.38	174.44	0.37	174.55	0.36	174.66	0.36	174.77	0.35	174.88	0.34	165
166	174.60	0.38	174.70	0.38	174.81	0.37	174.91	0.37	175.02	0.35	175.12	0.35	175.22	0.34	166
167	174.98	0.39	175.08	0.38	175.18	0.37	175.28	0.36	175.37	0.36	175.47	0.35	175.56	0.35	167
168	175.37	0.39	175.46	0.38	175.55	0.37	175.64	0.37	175.73	0.36	175.82	0.35	175.91	0.34	168
169	175.76	0.38	175.84	0.38	175.92	0.38	176.01	0.36	176.09	0.36	176.17	0.35	176.25	0.34	169
170	176.14	0.39	176.22	0.38	176.30	0.37	176.37	0.37	176.45	0.35	176.52	0.35	176.59	0.34	170
171	176.53	0.39	176.60	0.38	176.67	0.37	176.74	0.36	176.80	0.36	176.87	0.35	176.93	0.34	171
172	176.92	0.38	176.98	0.38	177.04	0.37	177.10	0.36	177.16	0.35	177.22	0.34	177.27	0.34	172
173	177.30	0.39	177.36	0.37	177.41	0.37	177.46	0.37	177.51	0.36	177.56	0.35	177.62	0.35	173
174	177.69	0.38	177.73	0.38	177.78	0.37	177.83	0.36	177.87	0.36	177.91	0.35	177.96	0.34	174
175	178.07	0.39	178.11	0.38	178.15	0.37	178.19	0.36	178.23	0.35	178.26	0.35	178.30	0.34	175
176	178.46	0.38	178.49	0.38	178.52	0.37	178.55	0.36	178.58	0.36	178.61	0.35	178.64	0.34	176
177	178.84	0.39	178.87	0.38	178.89	0.37	178.91	0.37	178.94	0.35	178.96	0.34	178.98	0.34	177
178	179.23	0.38	179.25	0.37	179.26	0.37	179.28	0.36	179.29	0.36	179.30	0.35	179.32	0.34	178
179	179.61	0.39	179.62	0.38	179.63	0.37	179.64	0.36	179.65	0.35	179.65	0.35	179.66	0.34	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .57$		$e = .58$		$e = .59$		$e = .60$		$e = .61$		$e = .62$		$e = .63$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
0°	0.00	4.44	0.00	4.61	0.00	4.80	0.00	5.00	0.00	5.21	0.00	5.43	0.00	5.67	0°
1	4.44	4.42	4.61	4.60	4.80	4.77	5.00	4.96	5.21	5.17	5.43	5.39	5.67	5.62	1
2	8.86	4.39	9.21	4.55	9.57	4.73	9.96	4.91	10.38	5.10	10.82	5.32	11.29	5.54	2
3	13.25	4.32	13.76	4.48	14.30	4.66	14.87	4.84	15.48	5.02	16.14	5.21	16.83	5.42	3
4	17.57	4.26	18.24	4.41	18.96	4.56	19.71	4.72	20.50	4.90	21.35	5.08	22.25	5.27	4
5	21.83	4.17	22.65	4.31	23.52	4.45	24.43	4.61	25.40	4.77	26.43	4.93	27.52	5.10	5
6	26.00	4.07	26.96	4.20	27.97	4.33	29.04	4.47	30.17	4.61	31.36	4.75	32.62	4.90	6
7	30.07	3.97	31.16	4.08	32.30	4.20	33.51	4.32	34.78	4.44	36.11	4.57	37.52	4.70	7
8	34.04	3.85	35.24	3.95	36.50	4.06	37.83	4.16	39.22	4.27	40.68	4.38	42.22	4.48	8
9	37.89	3.72	39.19	3.82	40.56	3.91	41.99	4.00	43.49	4.09	45.06	4.18	46.70	4.27	9
10	41.61	3.61	43.01	3.68	44.47	3.76	45.99	3.84	47.58	3.92	49.24	3.99	50.97	4.06	10
11	45.22	3.48	46.69	3.55	48.23	3.61	49.83	3.68	51.50	3.74	53.23	3.80	55.03	3.86	11
12	48.70	3.35	50.24	3.41	51.84	3.47	53.51	3.51	55.24	3.56	57.03	3.61	58.89	3.65	12
13	52.05	3.22	53.65	3.27	55.31	3.32	57.02	3.36	58.80	3.40	60.64	3.43	62.54	3.46	13
14	55.27	3.11	56.92	3.14	58.63	3.17	60.38	3.21	62.20	3.24	64.07	3.26	66.00	3.28	14
15	58.38	2.98	60.06	3.01	61.80	3.04	63.59	3.07	65.44	3.08	67.33	3.10	69.28	3.11	15
16	61.36	2.86	63.07	2.89	64.84	2.91	66.66	2.92	68.52	2.94	70.43	2.95	72.39	2.95	16
17	64.22	2.75	65.96	2.77	67.75	2.78	69.58	2.79	71.46	2.79	73.38	2.80	75.34	2.80	17
18	66.97	2.65	68.73	2.66	70.53	2.66	72.37	2.67	74.25	2.67	76.18	2.66	78.14	2.65	18
19	69.62	2.54	71.39	2.54	73.19	2.55	75.04	2.54	76.92	2.54	78.84	2.53	80.79	2.52	19
20	72.16	2.44	73.93	2.44	75.74	2.44	77.58	2.44	79.46	2.43	81.37	2.42	83.31	2.40	20
21	74.60	2.34	76.37	2.34	78.18	2.34	80.02	2.33	81.89	2.32	83.79	2.30	85.71	2.29	21
22	76.94	2.25	78.71	2.25	80.52	2.23	82.35	2.23	84.21	2.21	86.09	2.20	88.00	2.18	22
23	79.19	2.17	80.96	2.16	82.75	2.15	84.58	2.13	86.42	2.12	88.29	2.10	90.18	2.07	23
24	81.36	2.08	83.12	2.07	84.90	2.06	86.71	2.05	88.54	2.03	90.39	2.01	92.25	1.99	24
25	83.44	2.01	85.19	2.00	86.96	1.99	88.76	1.96	90.57	1.94	92.40	1.92	94.24	1.90	25
26	85.45	1.93	87.19	1.92	88.95	1.90	90.72	1.89	92.51	1.87	94.32	1.84	96.14	1.81	26
27	87.38	1.86	89.11	1.85	90.85	1.83	92.61	1.81	94.38	1.79	96.16	1.77	97.95	1.75	27
28	89.24	1.80	90.96	1.78	92.68	1.76	94.42	1.74	96.17	1.72	97.93	1.70	99.70	1.67	28
29	91.04	1.74	92.74	1.71	94.44	1.70	96.16	1.68	97.89	1.65	99.63	1.63	101.37	1.60	29
30	92.78	1.67	94.45	1.66	96.14	1.64	97.84	1.62	99.54	1.60	101.26	1.57	102.97	1.55	30
31	94.45	1.62	96.11	1.60	97.78	1.58	99.46	1.56	101.14	1.53	102.83	1.51	104.52	1.48	31
32	96.07	1.57	97.71	1.55	99.36	1.53	101.02	1.50	102.67	1.48	104.34	1.45	106.00	1.43	32
33	97.64	1.51	99.26	1.49	100.89	1.47	102.52	1.45	104.15	1.43	105.79	1.41	107.43	1.38	33
34	99.15	1.47	100.75	1.45	102.36	1.43	103.97	1.41	105.58	1.39	107.20	1.36	108.81	1.33	34
35	100.62	1.42	102.20	1.40	103.79	1.38	105.38	1.36	106.97	1.33	108.56	1.31	110.14	1.29	35
36	102.04	1.38	103.60	1.36	105.17	1.34	106.74	1.31	108.30	1.29	109.87	1.27	111.43	1.25	36
37	103.42	1.34	104.96	1.32	106.51	1.29	108.05	1.27	109.59	1.26	111.14	1.22	112.68	1.20	37
38	104.76	1.30	106.28	1.28	107.80	1.26	109.32	1.24	110.85	1.21	112.36	1.19	113.88	1.17	38
39	106.06	1.26	107.56	1.24	109.06	1.22	110.56	1.20	112.06	1.18	113.55	1.16	115.05	1.13	39
40	107.32	1.22	108.80	1.20	110.28	1.19	111.76	1.16	113.24	1.14	114.71	1.12	116.18	1.09	40
41	108.54	1.19	110.00	1.17	111.47	1.15	112.92	1.13	114.38	1.11	115.83	1.09	117.27	1.07	41
42	109.73	1.16	111.17	1.15	112.62	1.12	114.05	1.10	115.49	1.07	116.92	1.05	118.34	1.03	42
43	110.89	1.13	112.32	1.11	113.74	1.09	115.15	1.07	116.56	1.05	117.97	1.02	119.37	1.01	43
44	112.02	1.10	113.43	1.08	114.83	1.06	116.22	1.04	117.61	1.02	118.99	1.00	120.38	0.98	44
45	113.12	1.07	114.51	1.05	115.89	1.03	117.26	1.01	118.63	1.00	119.99	0.98	121.36	0.95	45
46	114.19	1.05	115.56	1.03	116.92	1.01	118.27	0.99	119.63	0.96	120.97	0.95	122.31	0.93	46
47	115.24	1.02	116.59	1.00	117.93	0.98	119.26	0.97	120.59	0.95	121.92	0.92	123.24	0.90	47
48	116.26	1.00	117.59	0.98	118.91	0.96	120.23	0.94	121.54	0.92	122.84	0.90	124.14	0.88	48
49	117.26	0.97	118.57	0.95	119.87	0.94	121.17	0.92	122.46	0.90	123.74	0.88	125.02	0.86	49
50	118.23	0.95	119.52	0.93	120.81	0.91	122.09	0.89	123.36	0.87	124.62	0.86	125.88	0.84	50
51	119.18	0.93	120.45	0.91	121.72	0.89	122.98	0.88	124.23	0.86	125.48	0.84	126.72	0.82	51
52	120.11	0.91	121.36	0.90	122.61	0.88	123.86	0.85	125.09	0.84	126.32	0.82	127.54	0.80	52
53	121.02	0.89	122.26	0.87	123.49	0.85	124.71	0.84	125.93	0.82	127.14	0.80	128.34	0.78	53
54	121.91	0.87	123.13	0.85	124.34	0.84	125.55	0.82	126.75	0.80	127.94	0.78	129.12	0.77	54
55	122.78	0.85	123.98	0.84	125.18	0.82	126.37	0.80	127.55	0.78	128.72	0.77	129.89	0.75	55
56	123.63	0.84	124.82	0.82	126.00	0.80	127.17	0.79	128.33	0.77	129.49	0.75	130.64	0.73	56
57	124.47	0.82	125.64	0.80	126.80	0.79	127.96	0.77	129.10	0.76	130.24	0.74	131.37	0.72	57
58	125.29	0.80	126.44	0.79	127.59	0.77	128.73	0.75	129.86	0.74	130.98	0.72	132.09	0.71	58
59	126.09	0.79	127.23	0.77	128.36	0.76	129.48	0.74	130.60	0.72	131.70	0.71	132.80	0.69	59
60	126.88		128.00		129.12		130.22		131.32		132.41		133.49		60

M	$e = .57$		$e = .58$		$e = .59$		$e = .60$		$e = .61$		$e = .62$		$e = .63$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60°	126.88		128.00		129.12		130.22		131.32		132.41		133.49		60°
		0.77		0.76		0.74		0.73		0.71		0.69		0.68	
61	127.65		128.76		129.86		130.95		132.03		133.10		134.17		61
		0.76		0.74		0.73		0.71		0.70		0.69		0.67	
62	128.41		129.50		130.59		131.66		132.73		133.79		134.84		62
		0.75		0.73		0.71		0.70		0.68		0.66		0.65	
63	129.16		130.23		131.30		132.36		133.41		134.45		135.49		63
		0.73		0.72		0.70		0.69		0.67		0.66		0.64	
64	129.89		130.95		132.00		133.05		134.08		135.11		136.13		64
		0.72		0.70		0.69		0.67		0.66		0.65		0.63	
65	130.61		131.65		132.69		133.72		134.74		135.76		136.76		65
		0.71		0.70		0.68		0.66		0.65		0.63		0.62	
66	131.32		132.35		133.37		134.38		135.39		136.39		137.38		66
		0.69		0.68		0.67		0.66		0.64		0.62		0.61	
67	132.01		133.03		134.04		135.04		136.03		137.01		137.99		67
		0.68		0.67		0.65		0.64		0.62		0.62		0.60	
68	132.69		133.70		134.69		135.68		136.65		137.63		138.59		68
		0.68		0.66		0.65		0.63		0.62		0.60		0.59	
69	133.37		134.36		135.34		136.31		137.27		138.23		139.18		69
		0.66		0.64		0.63		0.62		0.61		0.59		0.58	
70	134.03		135.00		135.97		136.93		137.88		138.82		139.76		70
		0.65		0.64		0.63		0.61		0.60		0.59		0.57	
71	134.68		135.64		136.60		137.54		138.48		139.41		140.33		71
		0.64		0.63		0.61		0.60		0.59		0.57		0.56	
72	135.32		136.27		137.21		138.14		139.07		139.98		140.89		72
		0.64		0.62		0.61		0.60		0.58		0.57		0.56	
73	135.96		136.89		137.82		138.74		139.65		140.55		141.45		73
		0.62		0.61		0.60		0.58		0.57		0.56		0.54	
74	136.58		137.50		138.42		139.32		140.22		141.11		141.99		74
		0.62		0.60		0.58		0.58		0.56		0.55		0.54	
75	137.20		138.10		139.00		139.90		140.78		141.66		142.53		75
		0.60		0.60		0.59		0.56		0.56		0.54		0.53	
76	137.80		138.70		139.59		140.46		141.34		142.20		143.06		76
		0.60		0.58		0.57		0.56		0.54		0.54		0.52	
77	138.40		139.28		140.16		141.02		141.88		142.74		143.58		77
		0.59		0.58		0.56		0.56		0.54		0.52		0.52	
78	138.99		139.86		140.72		141.58		142.42		143.26		144.10		78
		0.58		0.57		0.56		0.54		0.54		0.53		0.51	
79	139.57		140.43		141.28		142.12		142.96		143.79		144.61		79
		0.57		0.56		0.55		0.54		0.52		0.51		0.50	
80	140.14		140.99		141.83		142.66		143.48		144.30		145.11		80
		0.57		0.55		0.54		0.53		0.52		0.51		0.49	
81	140.71		141.54		142.37		143.19		144.00		144.81		145.60		81
		0.56		0.55		0.54		0.52		0.51		0.50		0.49	
82	141.27		142.09		142.91		143.71		144.51		145.31		146.09		82
		0.55		0.54		0.53		0.52		0.51		0.49		0.49	
83	141.82		142.63		143.44		144.23		145.02		145.80		146.58		83
		0.55		0.54		0.52		0.51		0.50		0.49		0.47	
84	142.37		143.17		143.96		144.74		145.52		146.29		147.05		84
		0.54		0.53		0.52		0.51		0.49		0.48		0.47	
85	142.91		143.70		144.48		145.25		146.01		146.77		147.52		85
		0.53		0.52		0.51		0.50		0.49		0.48		0.47	
86	143.44		144.22		144.99		145.75		146.50		147.25		147.99		86
		0.53		0.51		0.50		0.49		0.48		0.47		0.46	
87	143.97		144.73		145.49		146.24		146.98		147.72		148.45		87
		0.52		0.51		0.50		0.49		0.48		0.47		0.46	
88	144.49		145.24		145.99		146.73		147.46		148.19		148.91		88
		0.51		0.51		0.49		0.48		0.47		0.46		0.45	
89	145.00		145.75		146.48		147.21		147.93		148.65		149.36		89
		0.51		0.50		0.49		0.48		0.47		0.45		0.44	
90	145.51		146.25		146.97		147.69		148.40		149.10		149.80		90
		0.51		0.49		0.48		0.47		0.46		0.45		0.44	
91	146.02		146.74		147.45		148.16		148.86		149.55		150.24		91
		0.50		0.49		0.48		0.47		0.46		0.45		0.44	
92	146.52		147.23		147.93		148.63		149.32		150.00		150.68		92
		0.49		0.48		0.47		0.46		0.45		0.44		0.43	
93	147.01		147.71		148.40		149.09		149.77		150.44		151.11		93
		0.49		0.48		0.47		0.46		0.45		0.44		0.43	
94	147.50		148.19		148.87		149.55		150.22		150.88		151.54		94
		0.48		0.47		0.46		0.45		0.44		0.43		0.42	
95	147.98		148.66		149.33		150.00		150.66		151.31		151.96		95
		0.48		0.47		0.46		0.45		0.44		0.43		0.42	
96	148.46		149.13		149.79		150.45		151.10		151.74		152.38		96
		0.48		0.46		0.46		0.44		0.43		0.43		0.41	
97	148.94		149.59		150.25		150.89		151.53		152.17		152.79		97
		0.47		0.46		0.45		0.44		0.43		0.42		0.41	
98	149.41		150.05		150.70		151.33		151.96		152.59		153.20		98
		0.46		0.46		0.44		0.44		0.43		0.41		0.41	
99	149.87		150.51		151.14		151.77		152.39		153.00		153.61		99
		0.46		0.45		0.44		0.43		0.42		0.42		0.40	
100	150.33		150.96		151.58		152.20		152.81		153.42		154.01		100
		0.46		0.45		0.44		0.43		0.42		0.41		0.40	
101	150.79		151.41		152.02		152.63		153.23		153.83		154.41		101
		0.45		0.44		0.44		0.42		0.41		0.40		0.40	
102	151.24		151.85		152.46		153.05		153.64		154.23		154.81		102
		0.45		0.44		0.43		0.42		0.42		0.40		0.39	
103	151.69		152.29		152.89		153.47		154.06		154.63		155.20		103
		0.45		0.44		0.42		0.42		0.40		0.40		0.39	
104	152.14		152.73		153.31		153.89		154.46		155.03		155.59		104
		0.44		0.43		0.43		0.41		0.41		0.40		0.39	
105	152.58		153.16		153.74		154.30		154.87		155.43		155.98		105
		0.44		0.43		0.41		0.41		0.40		0.39		0.38	
106	153.02		153.59		154.15		154.71		155.27		155.82		156.36		106
		0.43		0.42		0.42		0.41		0.40		0.39		0.38	
107	153.45		154.01		154.57		155.12		155.67		156.21		156.74		107
		0.43		0.43		0.41		0.41		0.39		0.38		0.38	
108	153.88		154.44		154.98		155.53		156.06		156.59		157.12		108
		0.43		0.42		0.41		0.40		0.39		0.39		0.38	
109	154.31		154.86		155.39		155.93		156.45		156.98		157.50		109
		0.43		0.41		0.41		0.39		0.39		0.38		0.37	
110	154.74		155.27		155.80		156.32		156.84		157.36		157.87		110
		0.42		0.41		0.41		0.40		0.39		0.38		0.37	
111	155.16		155.68		156.21		156.72		157.23		157.74		158.24		111
		0.42		0.41		0.40		0.39		0.38		0.37		0.36	
112	155.58		156.09		156.61		157.11		157.61		158.11		158.60		112
		0.41		0.41		0.39		0.39		0.38		0.37		0.37	
113	155.99		156.50		157.00		157.50		157.99		158.48		158.97		113
		0.42		0.40		0.40		0.39		0.38		0.37		0.36	
114	156.41		156.90		157.40		157.89		158.37		158.85		159.33		114
		0.41		0.41		0.39		0.38		0.38		0.37		0.36	
115	156.82		157.31		157.79		158.27		158.75		159.22		159.69		115
		0.40		0.39		0.39		0.38		0.37		0.36		0.35	
116	157.22		157.70		158.18		158.65		159.12		159.58		160.04		116
		0.41		0.40		0.39		0.38		0.37		0.37		0.36	
117	157.63		158.10		158.57		159.03		159.49		159.95		160.40		117
		0.40		0.39		0.38		0.38		0.37		0.36		0.35	
118	158.03		158.49		158.95		159.41		159.86		160.31		160.75		118
		0.40		0.39		0.39		0.37		0.37		0.35		0.35	
119	158.43		158.88		159.34		159.78		160.23		160.66		161.10		119
		0.40		0.39		0.38		0.37		0.36		0.36		0.34	
120	158.83		159.27		159.72		160.15		160.59		161.02		161.44		120

M	e = .57		e = .58		e = .59		e = .60		e = .61		e = .62		e = .63		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	158.83	0.39	159.27	0.39	159.72	0.37	160.15	0.37	160.59	0.36	161.02	0.35	161.44	0.35	120°
121	159.22	0.39	159.66	0.38	160.09	0.38	160.52	0.37	160.95	0.36	161.37	0.35	161.79	0.34	121
122	159.61	0.39	160.04	0.38	160.47	0.37	160.89	0.37	161.31	0.36	161.72	0.35	162.13	0.34	122
123	160.00	0.39	160.42	0.38	160.84	0.37	161.26	0.37	161.67	0.36	162.07	0.35	162.47	0.34	123
124	160.39	0.39	160.80	0.38	161.21	0.37	161.62	0.36	162.02	0.35	162.42	0.35	162.81	0.34	124
		0.39		0.38		0.37		0.36		0.35		0.35		0.34	
125	160.78		161.18		161.58		161.98		162.37		162.77		163.15		125
126	161.16	0.38	161.56	0.38	161.95	0.37	162.34	0.36	162.73	0.36	163.11	0.34	163.49	0.34	126
127	161.54	0.38	161.93	0.37	162.32	0.37	162.70	0.36	163.08	0.35	163.45	0.34	163.82	0.33	127
128	161.92	0.38	162.30	0.37	162.68	0.36	163.05	0.35	163.42	0.34	163.79	0.34	164.15	0.33	128
129	162.30	0.38	162.67	0.37	163.04	0.36	163.41	0.36	163.77	0.35	164.13	0.34	164.48	0.33	129
		0.37		0.37		0.36		0.35		0.34		0.33		0.33	
130	162.67		163.04		163.40		163.76		164.11		164.46		164.81		130
131	163.05	0.38	163.40	0.36	163.76	0.36	164.11	0.35	164.46	0.35	164.80	0.34	165.14	0.33	131
132	163.42	0.37	163.77	0.37	164.11	0.35	164.46	0.35	164.80	0.34	165.13	0.33	165.47	0.33	132
133	163.79	0.37	164.13	0.36	164.47	0.36	164.80	0.34	165.14	0.34	165.46	0.33	165.79	0.32	133
134	164.16	0.37	164.49	0.36	164.82	0.35	165.15	0.35	165.47	0.33	165.79	0.33	166.11	0.32	134
		0.36		0.36		0.35		0.34		0.34		0.33		0.32	
135	164.52		164.85		165.17		165.49		165.81		166.12		166.43		135
136	164.89	0.37	165.21	0.36	165.52	0.35	165.84	0.35	166.15	0.34	166.45	0.33	166.75	0.32	136
137	165.25	0.36	165.56	0.35	165.87	0.35	166.18	0.34	166.48	0.33	166.78	0.33	167.07	0.32	137
138	165.61	0.36	165.92	0.36	166.22	0.35	166.52	0.34	166.81	0.33	167.10	0.32	167.39	0.32	138
139	165.98	0.37	166.27	0.35	166.56	0.34	166.85	0.33	167.14	0.33	167.42	0.32	167.71	0.32	139
		0.36		0.35		0.35		0.34		0.33		0.33		0.31	
140	166.34		166.62		166.91		167.19		167.47		167.75		168.02		140
141	166.69	0.35	166.97	0.35	167.25	0.34	167.53	0.34	167.80	0.33	168.07	0.32	168.34	0.32	141
142	167.05	0.36	167.32	0.35	167.59	0.34	167.86	0.33	168.13	0.33	168.39	0.32	168.65	0.31	142
143	167.41	0.36	167.67	0.35	167.93	0.34	168.19	0.33	168.45	0.32	168.71	0.32	168.96	0.31	143
144	167.76	0.35	168.02	0.35	168.27	0.34	168.53	0.34	168.78	0.33	169.03	0.32	169.27	0.31	144
		0.35		0.34		0.34		0.33		0.32		0.31		0.31	
145	168.11		168.36		168.61		168.86		169.10		169.34		169.58		145
146	168.47	0.36	168.71	0.35	168.95	0.34	169.19	0.33	169.42	0.32	169.66	0.32	169.89	0.31	146
147	168.82	0.35	169.05	0.34	169.28	0.33	169.52	0.33	169.74	0.32	169.97	0.31	170.20	0.31	147
148	169.17	0.35	169.39	0.34	169.62	0.34	169.84	0.32	170.07	0.33	170.29	0.32	170.50	0.30	148
149	169.51	0.34	169.74	0.35	169.95	0.33	170.17	0.33	170.39	0.32	170.60	0.31	170.81	0.31	149
		0.35		0.34		0.34		0.33		0.31		0.31		0.30	
150	169.86		170.08		170.29		170.50		170.70		170.91		171.11		150
151	170.21	0.35	170.42	0.34	170.62	0.33	170.82	0.32	171.02	0.32	171.22	0.31	171.42	0.31	151
152	170.56	0.35	170.75	0.33	170.95	0.33	171.15	0.33	171.34	0.32	171.53	0.31	171.72	0.30	152
153	170.90	0.34	171.09	0.34	171.28	0.33	171.47	0.32	171.66	0.32	171.84	0.31	172.02	0.30	153
154	171.24	0.34	171.43	0.34	171.61	0.33	171.79	0.32	171.97	0.31	172.15	0.31	172.32	0.30	154
		0.35		0.33		0.33		0.32		0.32		0.31		0.30	
155	171.59		171.76		171.94		172.11		172.29		172.46		172.62		155
156	171.93	0.34	172.10	0.34	172.27	0.33	172.43	0.32	172.60	0.31	172.76	0.30	172.92	0.30	156
157	172.27	0.34	172.43	0.33	172.60	0.33	172.76	0.33	172.91	0.31	173.07	0.31	173.22	0.30	157
158	172.61	0.34	172.77	0.34	172.92	0.32	173.07	0.31	173.23	0.32	173.38	0.31	173.52	0.30	158
159	172.95	0.34	173.10	0.33	173.25	0.33	173.39	0.32	173.54	0.31	173.68	0.30	173.82	0.30	159
		0.34		0.33		0.32		0.32		0.31		0.31		0.30	
160	173.29		173.43		173.57		173.71		173.85		173.99		174.12		160
161	173.63	0.34	173.77	0.34	173.90	0.33	174.03	0.32	174.16	0.31	174.29	0.30	174.42	0.30	161
162	173.97	0.34	174.10	0.33	174.22	0.32	174.35	0.32	174.47	0.31	174.59	0.30	174.71	0.29	162
163	174.31	0.34	174.43	0.33	174.55	0.33	174.66	0.31	174.78	0.31	174.90	0.31	175.01	0.30	163
164	174.65	0.34	174.76	0.33	174.87	0.32	174.98	0.32	175.09	0.31	175.20	0.30	175.31	0.30	164
		0.33		0.33		0.32		0.32		0.31		0.30		0.29	
165	174.98		175.09		175.19		175.30		175.40		175.50		175.60		165
166	175.32	0.34	175.42	0.33	175.52	0.33	175.61	0.31	175.71	0.31	175.80	0.30	175.90	0.30	166
167	175.66	0.34	175.75	0.33	175.84	0.32	175.93	0.32	176.02	0.31	176.10	0.30	176.19	0.29	167
168	175.99	0.33	176.08	0.33	176.16	0.32	176.24	0.31	176.32	0.30	176.40	0.30	176.49	0.30	168
169	176.33	0.34	176.40	0.32	176.48	0.32	176.56	0.32	176.63	0.31	176.71	0.31	176.78	0.29	169
		0.33		0.33		0.32		0.31		0.31		0.30		0.29	
170	176.66		176.73		176.80		176.87		176.94		177.01		177.07		170
171	177.00	0.34	177.06	0.33	177.12	0.32	177.18	0.31	177.25	0.31	177.31	0.30	177.37	0.30	171
172	177.33	0.33	177.39	0.33	177.44	0.32	177.50	0.32	177.55	0.30	177.61	0.30	177.66	0.29	172
173	177.67	0.34	177.71	0.32	177.76	0.32	177.81	0.31	177.86	0.31	177.91	0.30	177.95	0.29	173
174	178.00	0.33	178.04	0.33	178.08	0.32	178.12	0.31	178.17	0.31	178.21	0.30	178.25	0.30	174
		0.33		0.33		0.32		0.32		0.30		0.30		0.29	
175	178.33		178.37		178.40		178.44		178.47		178.51		178.54		175
176	178.67	0.34	178.69	0.32	178.72	0.32	178.75	0.31	178.78	0.31	178.80	0.29	178.83	0.29	176
177	179.00	0.33	179.02	0.33	179.04	0.32	179.06	0.31	179.08	0.30	179.10	0.30	179.12	0.29	177
178	179.33	0.33	179.35	0.33	179.36	0.32	179.37	0.31	179.39	0.31	179.40	0.30	179.41	0.29	178
179	179.67	0.34	179.67	0.32	179.68	0.32	179.69	0.32	179.69	0.30	179.70	0.30	179.71	0.30	179
		0.33		0.33		0.32		0.31		0.31		0.30		0.29	
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .64$		$e = .65$		$e = .66$		$e = .67$		$e = .68$		$e = .69$		$e = .70$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
0°	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0°
		5.92		6.19		6.49		6.81		7.15		7.51		7.91	
1	5.92		6.19		6.49		6.81		7.15		7.51		7.91		1
		5.87		6.14		6.42		6.72		7.05		7.42		7.80	
2	11.79		12.33		12.91		13.53		14.20		14.93		15.71		2
		5.78		6.03		6.30		6.58		6.89		7.21		7.56	
3	17.57		18.36		19.21		20.11		21.09		22.14		23.27		3
		5.64		5.87		6.11		6.38		6.65		6.93		7.23	
4	23.21		24.23		25.32		26.49		27.74		29.07		30.50		4
		5.47		5.68		5.90		6.12		6.35		6.60		6.86	
5	28.68		29.91		31.22		32.61		34.09		35.67		37.36		5
		5.27		5.45		5.64		5.83		6.03		6.24		6.44	
6	33.95		35.36		36.86		38.44		40.12		41.91		43.80		6
		5.06		5.21		5.37		5.53		5.69		5.84		6.00	
7	39.01		40.57		42.23		43.97		45.81		47.75		49.80		7
		4.82		4.96		5.08		5.21		5.34		5.46		5.58	
8	43.83		45.53		47.31		49.18		51.15		53.21		55.38		8
		4.60		4.70		4.80		4.91		4.99		5.09		5.16	
9	48.43		50.23		52.11		54.09		56.14		58.30		60.54		9
		4.35		4.44		4.52		4.58		4.66		4.71		4.77	
10	52.78		54.67		56.63		58.67		60.80		63.01		65.31		10
		4.13		4.19		4.25		4.30		4.35		4.39		4.41	
11	56.91		58.86		60.88		62.97		65.15		67.40		69.72		11
		3.90		3.95		3.99		4.03		4.05		4.06		4.08	
12	60.81		62.81		64.87		67.00		69.20		71.46		73.80		12
		3.69		3.72		3.74		3.76		3.77		3.78		3.78	
13	64.50		66.53		68.61		70.76		72.97		75.24		77.58		13
		3.49		3.50		3.52		3.53		3.53		3.52		3.50	
14	67.99		70.03		72.13		74.29		76.50		78.76		81.08		14
		3.29		3.31		3.31		3.30		3.29		3.28		3.25	
15	71.28		73.34		75.44		77.59		79.79		82.04		84.33		15
		3.12		3.11		3.11		3.10		3.08		3.06		3.03	
16	74.40		76.45		78.55		80.69		82.87		85.10		87.36		16
		2.94		2.94		2.93		2.91		2.89		2.86		2.83	
17	77.34		79.39		81.48		83.60		85.76		87.96		90.19		17
		2.79		2.78		2.76		2.74		2.72		2.68		2.64	
18	80.13		82.17		84.24		86.34		88.48		90.64		92.83		18
		2.65		2.63		2.61		2.58		2.55		2.52		2.48	
19	82.78		84.80		86.85		88.92		91.03		93.16		95.31		19
		2.51		2.48		2.46		2.44		2.40		2.37		2.33	
20	85.29		87.28		89.31		91.36		93.43		95.53		97.64		20
		2.38		2.36		2.33		2.30		2.27		2.23		2.19	
21	87.67		89.64		91.64		93.66		95.70		97.76		99.83		21
		2.26		2.24		2.21		2.18		2.15		2.11		2.07	
22	89.93		91.88		93.85		95.84		97.85		99.87		101.90		22
		2.15		2.13		2.10		2.07		2.03		1.99		1.96	
23	92.08		94.01		95.95		97.91		99.88		101.86		103.86		23
		2.06		2.03		2.00		1.96		1.93		1.90		1.85	
24	94.14		96.04		97.95		99.87		101.81		103.76		105.71		24
		1.96		1.93		1.90		1.87		1.83		1.79		1.76	
25	96.10		97.97		99.85		101.74		103.64		105.55		107.47		25
		1.87		1.84		1.81		1.78		1.75		1.71		1.67	
26	97.97		99.81		101.66		103.52		105.39		107.26		109.14		26
		1.79		1.76		1.73		1.70		1.66		1.63		1.59	
27	99.76		101.57		103.39		105.22		107.05		108.89		110.73		27
		1.71		1.69		1.66		1.63		1.59		1.55		1.52	
28	101.47		103.26		105.05		106.85		108.64		110.44		112.25		28
		1.65		1.61		1.58		1.55		1.52		1.49		1.45	
29	103.12		104.87		106.63		108.40		110.16		111.93		113.70		29
		1.58		1.55		1.52		1.49		1.46		1.42		1.38	
30	104.70		106.42		108.15		109.89		111.62		113.35		115.08		30
		1.51		1.49		1.46		1.42		1.39		1.37		1.33	
31	106.21		107.91		109.61		111.31		113.01		114.72		116.41		31
		1.46		1.43		1.40		1.37		1.34		1.30		1.28	
32	107.67		109.34		111.01		112.68		114.35		116.02		117.69		32
		1.41		1.38		1.35		1.32		1.29		1.26		1.23	
33	109.08		110.72		112.36		114.00		115.64		117.28		118.92		33
		1.35		1.33		1.30		1.27		1.24		1.21		1.17	
34	110.43		112.05		113.66		115.27		116.88		118.49		120.09		34
		1.31		1.28		1.25		1.22		1.20		1.17		1.14	
35	111.74		113.33		114.91		116.49		118.08		119.66		121.23		35
		1.26		1.23		1.21		1.19		1.15		1.12		1.09	
36	113.00		114.56		116.12		117.68		119.23		120.78		122.32		36
		1.22		1.19		1.17		1.14		1.11		1.08		1.06	
37	114.22		115.75		117.29		118.82		120.34		121.86		123.38		37
		1.18		1.15		1.12		1.10		1.08		1.05		1.02	
38	115.40		116.90		118.41		119.92		121.42		122.91		124.40		38
		1.14		1.12		1.10		1.06		1.04		1.02		0.99	
39	116.54		118.02		119.51		120.98		122.46		123.93		125.39		39
		1.11		1.09		1.05		1.04		1.00		0.98		0.95	
40	117.65		119.11		120.56		122.02		123.46		124.91		126.34		40
		1.07		1.05		1.03		1.00		0.98		0.95		0.93	
41	118.72		120.16		121.59		123.02		124.44		125.86		127.27		41
		1.04		1.01		0.99		0.97		0.95		0.92		0.90	
42	119.76		121.17		122.58		123.99		125.39		126.78		128.17		42
		1.01		0.99		0.97		0.94		0.92		0.89		0.87	
43	120.77		122.16		123.55		124.93		126.31		127.67		129.04		43
		0.98		0.96		0.94		0.92		0.89		0.87		0.84	
44	121.75		123.12		124.49		125.85		127.20		128.54		129.88		44
		0.96		0.94		0.91		0.89		0.86		0.85		0.83	
45	122.71		124.06		125.40		126.74		128.06		129.39		130.71		45
		0.93		0.91		0.89		0.86		0.85		0.82		0.80	
46	123.64		124.97		126.29		127.60		128.91		130.21		131.51		46
		0.91		0.88		0.86		0.84		0.82		0.80		0.77	
47	124.55		125.85		127.15		128.44		129.73		131.01		132.28		47
		0.88		0.87		0.84		0.83		0.80		0.78		0.76	
48	125.43		126.72		127.99		129.27		130.53		131.79		133.04		48
		0.86		0.84		0.82		0.80		0.78		0.76		0.74	
49	126.29		127.56		128.81		130.07		131.31		132.55		133.78		49
		0.84		0.82		0.81		0.78		0.76		0.74		0.72	
50	127.13		128.38		129.62		130.85		132.07		133.29		134.50		50
		0.82		0.80		0.78		0.76		0.74		0.72		0.71	
51	127.95		129.18		130.40		131.61		132.81		134.01		135.21		51
		0.80		0.78		0.76		0.74		0.73		0.71		0.68	
52	128.75		129.96		131.16		132.35		133.54		134.72		135.89		52
		0.79		0.77		0.75		0.73		0.71		0.69		0.68	
53	129.54		130.73		131.91		133.08		134.25		135.41		136.57		53
		0.76		0.74		0.73		0.71		0.69		0.68		0.65	
54	130.30		131.47		132.64		133.79		134.94		136.09		137.22		54
		0.75		0.73		0.71		0.70		0.68		0.66		0.64	
55	131.05		132.20		133.35		134.49		135.62		136.75		137.86		55
		0.73		0.72		0.70		0.68		0.66		0.64		0.63	
56	131.78		132.92		134.05		135.17		136.28		137.39		138.49		56
		0.72		0.70		0.68		0.66		0.65		0.63		0.62	
57	132.50		133.62		134.73		135.83		136.93		138.02		139.11		57
		0.70		0.69		0.67		0.66		0.64		0.62		0.60	
58	133.20		134.31		135.40		136.49		137.57		138.64		139.71		58
		0.69		0.67		0.66		0.64		0.62		0.61		0.59	
59	133.89		134.98		136.06		137.13		138.19		139.25		140.30		59
		0.68		0.66		0.64		0.62		0.61		0.59		0.58	
60	134.57		135.64		136.70		137.75		138.80		139.84		140.88		60

M	e = .64		e = .65		e = .66		e = .67		e = .68		e = .69		e = .70		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60	134.57	0.66	135.64	0.64	136.70	0.63	137.75	0.62	138.80	0.60	139.84	0.59	140.88	0.57	60
61	135.23	0.65	136.28	0.64	137.33	0.62	138.37	0.60	139.40	0.59	140.43	0.57	141.45	0.55	61
62	135.88	0.64	136.92	0.62	137.95	0.61	138.97	0.59	139.99	0.58	141.00	0.56	142.00	0.55	62
63	136.52	0.63	137.54	0.61	138.56	0.59	139.56	0.59	140.57	0.56	141.56	0.55	142.55	0.54	63
64	137.15	0.61	138.15	0.60	139.15	0.59	140.15	0.57	141.13	0.56	142.11	0.55	143.09	0.53	64
65	137.76	0.61	138.75	0.60	139.74	0.58	140.72	0.56	141.69	0.55	142.66	0.53	143.62	0.51	65
66	138.37	0.59	139.35	0.58	140.32	0.56	141.28	0.55	142.24	0.53	143.19	0.52	144.13	0.51	66
67	138.96	0.59	139.93	0.57	140.88	0.56	141.83	0.54	142.77	0.53	143.71	0.52	144.64	0.51	67
68	139.55	0.57	140.50	0.56	141.44	0.55	142.37	0.54	143.30	0.52	144.23	0.50	145.15	0.49	68
69	140.12	0.57	141.06	0.55	141.99	0.54	142.91	0.52	143.82	0.52	144.73	0.50	145.64	0.48	69
70	140.69	0.56	141.61	0.54	142.53	0.53	143.43	0.52	144.34	0.50	145.23	0.49	146.12	0.48	70
71	141.25	0.55	142.15	0.54	143.06	0.52	143.95	0.51	144.84	0.50	145.72	0.49	146.60	0.47	71
72	141.80	0.54	142.69	0.53	143.58	0.51	144.46	0.50	145.34	0.49	146.21	0.47	147.07	0.47	72
73	142.34	0.53	143.22	0.52	144.09	0.51	144.96	0.50	145.83	0.48	146.68	0.47	147.54	0.45	73
74	142.87	0.52	143.74	0.51	144.60	0.50	145.46	0.48	146.31	0.47	147.15	0.47	147.99	0.45	74
75	143.39	0.52	144.25	0.51	145.10	0.49	145.94	0.49	146.78	0.47	147.62	0.45	148.44	0.45	75
76	143.91	0.51	144.76	0.49	145.59	0.49	146.43	0.47	147.25	0.46	148.07	0.45	148.89	0.44	76
77	144.42	0.50	145.25	0.49	146.08	0.48	146.90	0.47	147.71	0.46	148.52	0.45	149.33	0.43	77
78	144.92	0.50	145.74	0.49	146.56	0.47	147.37	0.46	148.17	0.45	148.97	0.43	149.76	0.42	78
79	145.42	0.49	146.23	0.48	147.03	0.47	147.83	0.45	148.62	0.44	149.40	0.43	150.18	0.42	79
80	145.91	0.48	146.71	0.47	147.50	0.46	148.28	0.45	149.06	0.44	149.83	0.43	150.60	0.42	80
81	146.39	0.48	147.18	0.47	147.96	0.45	148.73	0.44	149.50	0.43	150.26	0.42	151.02	0.41	81
82	146.87	0.47	147.65	0.46	148.41	0.45	149.17	0.44	149.93	0.43	150.68	0.42	151.43	0.40	82
83	147.34	0.47	148.11	0.45	148.86	0.45	149.61	0.44	150.36	0.42	151.10	0.41	151.83	0.40	83
84	147.81	0.46	148.56	0.45	149.31	0.43	150.05	0.42	150.78	0.42	151.51	0.41	152.23	0.40	84
85	148.27	0.46	149.01	0.44	149.74	0.44	150.47	0.43	151.20	0.41	151.92	0.40	152.63	0.39	85
86	148.73	0.45	149.45	0.44	150.18	0.43	150.90	0.41	151.61	0.41	152.32	0.39	153.02	0.39	86
87	149.18	0.44	149.89	0.44	150.61	0.42	151.31	0.42	152.02	0.40	152.71	0.40	153.41	0.38	87
88	149.62	0.44	150.33	0.43	151.03	0.42	151.73	0.41	152.42	0.40	153.11	0.38	153.79	0.38	88
89	150.06	0.43	150.76	0.42	151.45	0.41	152.14	0.40	152.82	0.39	153.49	0.39	154.17	0.37	89
90	150.49	0.43	151.18	0.42	151.86	0.41	152.54	0.40	153.21	0.39	153.88	0.38	154.54	0.37	90
91	150.92	0.43	151.60	0.42	152.27	0.41	152.94	0.39	153.60	0.39	154.26	0.37	154.91	0.37	91
92	151.35	0.42	152.02	0.41	152.68	0.40	153.33	0.40	153.99	0.38	154.63	0.37	155.28	0.36	92
93	151.77	0.42	152.43	0.41	153.08	0.40	153.73	0.38	154.37	0.38	155.00	0.37	155.64	0.36	93
94	152.19	0.41	152.84	0.40	153.48	0.39	154.11	0.39	154.75	0.37	155.37	0.37	156.00	0.35	94
95	152.60	0.41	153.24	0.40	153.87	0.39	154.50	0.38	155.12	0.37	155.74	0.36	156.35	0.35	95
96	153.01	0.41	153.64	0.39	154.26	0.39	154.88	0.37	155.49	0.37	156.10	0.36	156.70	0.35	96
97	153.42	0.40	154.03	0.40	154.65	0.38	155.25	0.38	155.86	0.36	156.46	0.35	157.05	0.35	97
98	153.82	0.40	154.43	0.38	155.03	0.38	155.63	0.37	156.22	0.36	156.81	0.35	157.40	0.34	98
99	154.22	0.39	154.81	0.39	155.41	0.37	156.00	0.36	156.58	0.36	157.16	0.35	157.74	0.34	99
100	154.61	0.39	155.20	0.38	155.78	0.37	156.36	0.37	156.94	0.35	157.51	0.35	158.08	0.33	100
101	155.00	0.39	155.58	0.38	156.15	0.37	156.73	0.36	157.29	0.35	157.86	0.34	158.41	0.34	101
102	155.39	0.38	155.96	0.37	156.52	0.37	157.09	0.35	157.64	0.35	158.20	0.34	158.75	0.33	102
103	155.77	0.38	156.33	0.37	156.89	0.36	157.44	0.36	157.99	0.35	158.54	0.33	159.08	0.33	103
104	156.15	0.38	156.70	0.37	157.25	0.36	157.80	0.35	158.34	0.34	158.87	0.34	159.41	0.32	104
105	156.53	0.37	157.07	0.37	157.61	0.36	158.15	0.34	158.68	0.34	159.21	0.33	159.73	0.32	105
106	156.90	0.37	157.44	0.36	157.97	0.35	158.49	0.35	159.02	0.34	159.54	0.33	160.05	0.32	106
107	157.27	0.37	157.80	0.36	158.32	0.35	158.84	0.34	159.36	0.33	159.87	0.32	160.37	0.32	107
108	157.64	0.37	158.16	0.36	158.67	0.35	159.18	0.34	159.69	0.33	160.19	0.32	160.69	0.32	108
109	158.01	0.36	158.52	0.35	159.02	0.35	159.52	0.34	160.02	0.33	160.51	0.33	161.01	0.31	109
110	158.37	0.36	158.87	0.35	159.37	0.34	159.86	0.34	160.35	0.33	160.84	0.31	161.32	0.31	110
111	158.73	0.36	159.22	0.35	159.71	0.34	160.20	0.33	160.68	0.32	161.15	0.32	161.63	0.31	111
112	159.09	0.36	159.57	0.35	160.05	0.34	160.53	0.33	161.00	0.32	161.47	0.32	161.94	0.30	112
113	159.45	0.35	159.92	0.34	160.39	0.34	160.86	0.33	161.32	0.32	161.79	0.31	162.24	0.31	113
114	159.80	0.35	160.26	0.34	160.73	0.33	161.19	0.32	161.64	0.32	162.10	0.31	162.55	0.30	114
115	160.15	0.35	160.61	0.34	161.06	0.33	161.51	0.33	161.96	0.32	162.41	0.31	162.85	0.30	115
116	160.50	0.34	160.95	0.33	161.39	0.33	161.84	0.32	162.28	0.31	162.72	0.30	163.15	0.30	116
117	160.84	0.35	161.28	0.34	161.72	0.33	162.16	0.32	162.59	0.31	163.02	0.31	163.45	0.29	117
118	161.19	0.34	161.62	0.33	162.05	0.33	162.48	0.32	162.90	0.31	163.33	0.30	163.74	0.30	118
119	161.53	0.34	161.95	0.33	162.38	0.32	162.80	0.31	163.21	0.31	163.63	0.30	164.04	0.29	119
120	161.87		162.28		162.70		163.11		163.52		163.93		164.33		120

M	e = .64		e = .65		e = .66		e = .67		e = .68		e = .69		e = .70		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	161.87	0.33	162.28	0.33	162.70	0.32	163.11	0.32	163.52	0.31	163.93	0.30	164.33	0.29	120°
121	162.20	0.34	162.61	0.33	163.02	0.32	163.43	0.31	163.83	0.30	164.23	0.29	164.62	0.29	121
122	162.54	0.33	162.94	0.33	163.34	0.32	163.74	0.31	164.13	0.30	164.52	0.30	164.91	0.29	122
123	162.87	0.33	163.27	0.32	163.66	0.32	164.05	0.31	164.43	0.31	164.82	0.29	165.20	0.28	123
124	163.20	0.33	163.59	0.32	163.98	0.31	164.36	0.30	164.74	0.30	165.11	0.29	165.48	0.29	124
125	163.53		163.91		164.29		164.66		165.04		165.40		165.77		125
126	163.86	0.33	164.23	0.32	164.60	0.31	164.97	0.31	165.33	0.29	165.69	0.29	166.05	0.28	126
127	164.19	0.33	164.55	0.32	164.91	0.31	165.27	0.30	165.63	0.30	165.98	0.29	166.33	0.28	127
128	164.51	0.32	164.87	0.32	165.22	0.31	165.58	0.31	165.92	0.29	166.27	0.29	166.61	0.28	128
129	164.84	0.33	165.19	0.32	165.53	0.31	165.88	0.30	166.22	0.30	166.56	0.29	166.89	0.28	129
		0.32		0.31		0.31		0.29		0.29		0.28		0.28	
130	165.16		165.50		165.84		166.17		166.51		166.84		167.17		130
131	165.48	0.32	165.81	0.31	166.14	0.30	166.47	0.30	166.80	0.29	167.12	0.28	167.45	0.28	131
132	165.80	0.32	166.12	0.31	166.45	0.31	166.77	0.30	167.09	0.29	167.41	0.29	167.72	0.27	132
133	166.11	0.31	166.43	0.31	166.75	0.30	167.06	0.29	167.38	0.29	167.69	0.28	167.99	0.27	133
134	166.43	0.32	166.74	0.31	167.05	0.30	167.36	0.30	167.66	0.28	167.97	0.28	168.27	0.28	134
		0.31		0.31		0.30		0.29		0.29		0.27		0.27	
135	166.74		167.05		167.35		167.65		167.95		168.24		168.54		135
136	167.05	0.31	167.35	0.30	167.65	0.30	167.94	0.29	168.23	0.28	168.52	0.28	168.81	0.27	136
137	167.37	0.32	167.66	0.31	167.95	0.30	168.23	0.29	168.52	0.29	168.80	0.28	169.08	0.27	137
138	167.68	0.31	167.96	0.30	168.24	0.29	168.52	0.29	168.80	0.28	169.07	0.27	169.35	0.27	138
139	167.99	0.31	168.26	0.30	168.54	0.30	168.81	0.29	169.08	0.28	169.35	0.28	169.61	0.26	139
		0.30		0.30		0.29		0.28		0.28		0.27		0.27	
140	168.29		168.56		168.83		169.09		169.36		169.62		169.88		140
141	168.60	0.31	168.86	0.30	169.12	0.29	169.38	0.29	169.64	0.28	169.89	0.27	170.14	0.26	141
142	168.91	0.31	169.16	0.30	169.41	0.29	169.66	0.28	169.91	0.27	170.16	0.27	170.41	0.27	142
143	169.21	0.30	169.46	0.30	169.70	0.29	169.95	0.29	170.19	0.28	170.43	0.27	170.67	0.26	143
144	169.51	0.30	169.75	0.29	169.99	0.29	170.23	0.28	170.47	0.28	170.70	0.27	170.93	0.26	144
		0.31		0.30		0.29		0.28		0.27		0.27		0.26	
145	169.82		170.05		170.28		170.51		170.74		170.97		171.19		145
146	170.12	0.30	170.34	0.29	170.57	0.29	170.79	0.28	171.01	0.27	171.24	0.27	171.45	0.26	146
147	170.42	0.30	170.64	0.30	170.86	0.29	171.07	0.28	171.29	0.28	171.50	0.26	171.71	0.26	147
148	170.72	0.30	170.93	0.29	171.14	0.28	171.35	0.28	171.56	0.27	171.77	0.27	171.97	0.26	148
149	171.02	0.30	171.22	0.29	171.43	0.29	171.63	0.28	171.83	0.27	172.03	0.26	172.23	0.26	149
		0.29		0.29		0.28		0.28		0.27		0.27		0.26	
150	171.31		171.51		171.71		171.91		172.10		172.30		172.49		150
151	171.61	0.30	171.80	0.29	171.99	0.28	172.18	0.27	172.37	0.27	172.56	0.26	172.74	0.25	151
152	171.91	0.30	172.09	0.29	172.28	0.29	172.46	0.28	172.64	0.27	172.82	0.26	173.00	0.26	152
153	172.20	0.29	172.38	0.29	172.56	0.28	172.74	0.28	172.91	0.27	173.08	0.26	173.26	0.26	153
154	172.50	0.30	172.67	0.29	172.84	0.28	173.01	0.27	173.18	0.27	173.35	0.27	173.51	0.25	154
		0.29		0.29		0.28		0.27		0.27		0.26		0.26	
155	172.79		172.96		173.12		173.28		173.45		173.61		173.77		155
156	173.08	0.29	173.24	0.28	173.40	0.28	173.56	0.28	173.71	0.26	173.87	0.26	174.02	0.25	156
157	173.38	0.30	173.53	0.29	173.68	0.28	173.83	0.27	173.98	0.27	174.13	0.26	174.27	0.25	157
158	173.67	0.29	173.82	0.29	173.96	0.28	174.10	0.27	174.24	0.26	174.39	0.26	174.53	0.26	158
159	173.96	0.29	174.10	0.28	174.24	0.28	174.37	0.27	174.51	0.27	174.64	0.25	174.78	0.25	159
		0.29		0.28		0.27		0.28		0.26		0.26		0.25	
160	174.25		174.38		174.51		174.65		174.77		174.90		175.03		160
161	174.54	0.29	174.67	0.29	174.79	0.28	174.92	0.27	175.04	0.27	175.16	0.26	175.28	0.25	161
162	174.83	0.29	174.95	0.28	175.07	0.28	175.19	0.27	175.30	0.26	175.42	0.26	175.53	0.25	162
163	175.12	0.29	175.24	0.29	175.35	0.28	175.46	0.27	175.57	0.27	175.68	0.26	175.78	0.25	163
164	175.41	0.29	175.52	0.28	175.62	0.27	175.73	0.27	175.83	0.26	175.93	0.25	176.03	0.25	164
		0.29		0.28		0.28		0.26		0.26		0.26		0.25	
165	175.70		175.80		175.90		175.99		176.09		176.19		176.28		165
166	175.99	0.29	176.08	0.28	176.17	0.27	176.26	0.27	176.35	0.26	176.44	0.25	176.53	0.25	166
167	176.28	0.29	176.36	0.28	176.45	0.28	176.53	0.27	176.62	0.27	176.70	0.26	176.78	0.25	167
168	176.56	0.28	176.64	0.28	176.72	0.27	176.80	0.27	176.88	0.26	176.95	0.25	177.03	0.25	168
169	176.85	0.29	176.92	0.28	177.00	0.28	177.07	0.27	177.14	0.26	177.21	0.26	177.28	0.25	169
		0.29		0.28		0.27		0.26		0.26		0.25		0.25	
170	177.14		177.20		177.27		177.33		177.40		177.46		177.53		170
171	177.43	0.29	177.48	0.28	177.54	0.27	177.60	0.27	177.66	0.26	177.72	0.26	177.77	0.24	171
172	177.71	0.28	177.76	0.28	177.82	0.28	177.87	0.27	177.92	0.26	177.97	0.25	178.02	0.25	172
173	178.00	0.29	178.04	0.28	178.09	0.27	178.14	0.27	178.18	0.26	178.23	0.26	178.27	0.25	173
174	178.28	0.28	178.32	0.28	178.36	0.27	178.40	0.26	178.44	0.26	178.48	0.25	178.52	0.25	174
		0.29		0.28		0.28		0.27		0.26		0.25		0.24	
175	178.57		178.60		178.64		178.67		178.70		178.73		178.76		175
176	178.86	0.29	178.88	0.28	178.91	0.27	178.94	0.27	178.96	0.26	178.99	0.26	179.01	0.25	176
177	179.14	0.28	179.16	0.28	179.18	0.27	179.20	0.26	179.22	0.26	179.24	0.25	179.26	0.25	177
178	179.43	0.29	179.44	0.28	179.45	0.27	179.47	0.27	179.48	0.26	179.49	0.25	179.51	0.25	178
179	179.71	0.28	179.72	0.28	179.73	0.28	179.73	0.26	179.74	0.26	179.75	0.26	179.75	0.24	179
		0.29		0.28		0.27		0.27		0.26		0.25		0.25	
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

M	$e = .71$		$e = .72$		$e = .73$		$e = .74$		$e = .75$		$e = .76$		$e = .77$		M
°	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°
0	0.00	8.35	0.00	8.82	0.00	9.35	0.00	9.91	0.00	10.53	0.00	11.22	0.00	11.98	0
1	8.35	8.20	8.82	8.65	9.35	9.13	9.91	9.66	10.53	10.24	11.22	10.86	11.98	11.55	1
2	16.55	7.94	17.47	8.33	18.48	8.75	19.57	9.21	20.77	9.70	22.08	10.22	23.53	10.77	2
3	24.49	7.55	25.80	7.90	27.23	8.25	28.78	8.62	30.47	8.99	32.30	9.40	34.30	9.80	3
4	32.04	7.12	33.70	7.39	35.48	7.66	37.40	7.94	39.46	8.22	41.70	8.49	44.10	8.77	4
5	39.16	6.65	41.09	6.84	43.14	7.05	45.34	7.25	47.68	7.44	50.19	7.62	52.87	7.78	5
6	45.81	6.15	47.93	6.31	50.19	6.45	52.59	6.57	55.12	6.69	57.81	6.79	60.65	6.86	6
7	51.96	5.69	54.24	5.78	56.64	5.87	59.16	5.95	61.81	6.01	64.60	6.05	67.51	6.06	7
8	57.65	5.23	60.02	5.30	62.51	5.35	65.11	5.38	67.82	5.40	70.65	5.39	73.57	5.39	8
9	62.88	4.81	65.32	4.84	67.86	4.85	70.49	4.86	73.22	4.85	76.04	4.84	78.96	4.79	9
10	67.69	4.43	70.16	4.44	72.71	4.44	75.35	4.42	78.07	4.39	80.88	4.34	83.75	4.29	10
11	72.12	4.08	74.60	4.07	77.15	4.05	79.77	4.02	82.46	3.97	85.22	3.91	88.04	3.85	11
12	76.20	3.76	78.67	3.74	81.20	3.70	83.79	3.66	86.43	3.62	89.13	3.56	91.89	3.48	12
13	79.96	3.48	82.41	3.44	84.90	3.41	87.45	3.36	90.05	3.30	92.69	3.23	95.37	3.16	13
14	83.44	3.23	85.85	3.19	88.31	3.14	90.81	3.09	93.35	3.03	95.92	2.97	98.53	2.89	14
15	86.67	2.99	89.04	2.95	91.45	2.91	93.90	2.85	96.38	2.79	98.89	2.72	101.42	2.65	15
16	89.66	2.79	91.99	2.75	94.36	2.69	96.75	2.64	99.17	2.58	101.61	2.51	104.07	2.45	16
17	92.45	2.60	94.74	2.55	97.05	2.51	99.39	2.45	101.75	2.39	104.12	2.33	106.52	2.26	17
18	95.05	2.44	97.29	2.39	99.56	2.33	101.84	2.28	104.14	2.22	106.45	2.17	108.78	2.10	18
19	97.49	2.28	99.68	2.24	101.89	2.19	104.12	2.14	106.36	2.08	108.62	2.02	110.88	1.96	19
20	99.77	2.15	101.92	2.10	104.08	2.06	106.26	2.00	108.44	1.95	110.64	1.89	112.84	1.83	20
21	101.92	2.03	104.02	1.98	106.14	1.93	108.26	1.88	110.39	1.83	112.53	1.77	114.67	1.72	21
22	103.95	1.91	106.00	1.87	108.07	1.82	110.14	1.77	112.22	1.72	114.30	1.67	116.39	1.61	22
23	105.86	1.81	107.87	1.77	109.89	1.72	111.91	1.68	113.94	1.63	115.97	1.58	118.00	1.53	23
24	107.67	1.72	109.64	1.67	111.61	1.63	113.59	1.58	115.57	1.53	117.55	1.49	119.53	1.44	24
25	109.39	1.63	111.31	1.59	113.24	1.55	115.17	1.51	117.10	1.46	119.04	1.41	120.97	1.37	25
26	111.02	1.55	112.90	1.52	114.79	1.47	116.68	1.42	118.56	1.39	120.45	1.34	122.34	1.30	26
27	112.57	1.48	114.42	1.44	116.26	1.40	118.10	1.37	119.95	1.32	121.79	1.28	123.64	1.23	27
28	114.05	1.42	115.86	1.37	117.66	1.34	119.47	1.30	121.27	1.26	123.07	1.22	124.87	1.18	28
29	115.47	1.35	117.23	1.32	119.00	1.28	120.77	1.24	122.53	1.20	124.29	1.17	126.05	1.13	29
30	116.82	1.29	118.55	1.26	120.28	1.22	122.01	1.18	123.73	1.15	125.46	1.11	127.18	1.08	30
31	118.11	1.24	119.81	1.21	121.50	1.18	123.19	1.14	124.88	1.11	126.57	1.07	128.26	1.03	31
32	119.35	1.20	121.02	1.16	122.68	1.12	124.33	1.10	125.99	1.06	127.64	1.02	129.29	0.99	32
33	120.55	1.15	122.18	1.11	123.80	1.09	125.43	1.05	127.05	1.01	128.66	0.99	130.28	0.95	33
34	121.70	1.10	123.29	1.08	124.89	1.04	126.48	1.01	128.06	0.99	129.65	0.95	131.23	0.92	34
35	122.80	1.06	124.37	1.03	125.93	1.00	127.49	0.97	129.05	0.94	130.60	0.91	132.15	0.88	35
36	123.86	1.03	125.40	1.00	126.93	0.97	128.46	0.94	129.99	0.91	131.51	0.88	133.03	0.85	36
37	124.89	1.00	126.40	0.97	127.90	0.94	129.40	0.91	130.90	0.88	132.39	0.85	133.88	0.82	37
38	125.89	0.95	127.37	0.93	128.84	0.91	130.31	0.88	131.78	0.85	133.24	0.83	134.70	0.80	38
39	126.84	0.94	128.30	0.90	129.75	0.87	131.19	0.85	132.63	0.82	134.07	0.79	135.50	0.77	39
40	127.78	0.89	129.20	0.88	130.62	0.85	132.04	0.82	133.45	0.80	134.86	0.78	136.27	0.75	40
41	128.67	0.88	130.08	0.84	131.47	0.83	132.86	0.80	134.25	0.77	135.64	0.74	137.02	0.72	41
42	129.55	0.84	130.92	0.83	132.30	0.79	133.66	0.78	135.02	0.76	136.38	0.73	137.74	0.70	42
43	130.39	0.83	131.75	0.80	133.09	0.78	134.44	0.75	135.78	0.72	137.11	0.70	138.44	0.68	43
44	131.22	0.80	132.55	0.77	133.87	0.75	135.19	0.73	136.50	0.71	137.81	0.69	139.12	0.66	44
45	132.02	0.78	133.32	0.76	134.62	0.74	135.92	0.71	137.21	0.69	138.50	0.67	139.78	0.65	45
46	132.80	0.75	134.08	0.73	135.36	0.71	136.63	0.69	137.90	0.67	139.17	0.64	140.43	0.63	46
47	133.55	0.74	134.81	0.72	136.07	0.70	137.32	0.68	138.57	0.66	139.81	0.64	141.06	0.61	47
48	134.29	0.72	135.53	0.70	136.77	0.68	138.00	0.65	139.23	0.63	140.45	0.62	141.67	0.59	48
49	135.01	0.70	136.23	0.68	137.45	0.66	138.65	0.65	139.86	0.62	141.07	0.60	142.26	0.59	49
50	135.71	0.68	136.91	0.67	138.11	0.64	139.30	0.62	140.48	0.61	141.67	0.58	142.85	0.56	50
51	136.39	0.67	137.58	0.64	138.75	0.63	139.92	0.61	141.09	0.59	142.25	0.58	143.41	0.56	51
52	137.06	0.66	138.22	0.64	139.38	0.62	140.53	0.60	141.68	0.58	142.83	0.56	143.97	0.54	52
53	137.72	0.63	138.86	0.62	140.00	0.60	141.13	0.59	142.26	0.57	143.39	0.54	144.51	0.53	53
54	138.35	0.63	139.48	0.60	140.60	0.59	141.72	0.57	142.83	0.55	143.93	0.54	145.04	0.52	54
55	138.98	0.61	140.08	0.60	141.19	0.57	142.29	0.55	143.38	0.54	144.47	0.52	145.56	0.51	55
56	139.59	0.60	140.68	0.58	141.76	0.57	142.84	0.55	143.92	0.53	144.99	0.52	146.07	0.49	56
57	140.19	0.58	141.26	0.57	142.33	0.55	143.39	0.54	144.45	0.52	145.51	0.50	146.56	0.49	57
58	140.77	0.58	141.83	0.56	142.88	0.54	143.93	0.52	144.97	0.51	146.01	0.50	147.05	0.48	58
59	141.35	0.56	142.39	0.54	143.42	0.53	144.45	0.52	145.48	0.50	146.51	0.48	147.53	0.47	59
60	141.91		142.93		143.95		144.97		145.98		146.99		148.00		60

M	$e = .71$		$e = .72$		$e = .73$		$e = .74$		$e = .75$		$e = .76$		$e = .77$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
60	141.91	0.55	142.93	0.54	143.95	0.52	144.97	0.50	145.98	0.49	146.99	0.47	148.00	0.45	60
61	142.46	0.54	143.47	0.53	144.47	0.52	145.47	0.50	146.47	0.48	147.46	0.47	148.45	0.45	61
62	143.00	0.54	144.00	0.51	144.99	0.50	145.97	0.49	146.95	0.47	147.93	0.46	148.90	0.45	62
63	143.54	0.52	144.51	0.51	145.49	0.49	146.46	0.48	147.42	0.47	148.39	0.45	149.35	0.43	63
64	144.06	0.51	145.02	0.50	145.98	0.48	146.94	0.47	147.89	0.45	148.84	0.44	149.78	0.43	64
65	144.57	0.50	145.52	0.49	146.46	0.48	147.41	0.46	148.34	0.45	149.28	0.43	150.21	0.42	65
66	145.07	0.50	146.01	0.48	146.94	0.47	147.87	0.45	148.79	0.44	149.71	0.43	150.63	0.41	66
67	145.57	0.49	146.49	0.48	147.41	0.46	148.32	0.45	149.23	0.44	150.14	0.42	151.04	0.41	67
68	146.06	0.48	146.97	0.46	147.87	0.45	148.77	0.44	149.67	0.42	150.56	0.41	151.45	0.40	68
69	146.54	0.47	147.43	0.46	148.32	0.45	149.21	0.43	150.09	0.42	150.97	0.41	151.85	0.39	69
70	147.01	0.46	147.89	0.45	148.77	0.44	149.64	0.43	150.51	0.41	151.38	0.40	152.24	0.39	70
71	147.47	0.46	148.34	0.45	149.21	0.43	150.07	0.42	150.92	0.41	151.78	0.39	152.63	0.38	71
72	147.93	0.45	148.79	0.44	149.64	0.43	150.49	0.41	151.33	0.40	152.17	0.39	153.01	0.38	72
73	148.38	0.45	149.23	0.43	150.07	0.42	150.90	0.41	151.73	0.40	152.56	0.39	153.39	0.37	73
74	148.83	0.44	149.66	0.42	150.49	0.41	151.31	0.40	152.13	0.39	152.95	0.37	153.76	0.37	74
75	149.27	0.43	150.08	0.42	150.90	0.41	151.71	0.40	152.52	0.38	153.32	0.38	154.13	0.36	75
76	149.70	0.42	150.50	0.42	151.31	0.40	152.11	0.39	152.90	0.38	153.70	0.36	154.49	0.35	76
77	150.12	0.42	150.92	0.41	151.71	0.40	152.50	0.38	153.28	0.38	154.06	0.37	154.84	0.35	77
78	150.54	0.42	151.33	0.40	152.11	0.39	152.88	0.38	153.66	0.36	154.43	0.35	155.19	0.35	78
79	150.96	0.41	151.73	0.40	152.50	0.38	153.26	0.38	154.02	0.37	154.78	0.36	155.54	0.34	79
80	151.37	0.40	152.13	0.39	152.88	0.39	153.64	0.37	154.39	0.36	155.14	0.35	155.88	0.34	80
81	151.77	0.40	152.52	0.39	153.27	0.37	154.01	0.37	154.75	0.35	155.49	0.34	156.22	0.34	81
82	152.17	0.40	152.91	0.38	153.64	0.38	154.38	0.36	155.10	0.35	155.83	0.34	156.56	0.33	82
83	152.57	0.38	153.29	0.38	154.02	0.36	154.74	0.35	155.45	0.35	156.17	0.34	156.89	0.32	83
84	152.95	0.39	153.67	0.38	154.38	0.37	155.09	0.36	155.80	0.34	156.51	0.33	157.21	0.32	84
85	153.34	0.38	154.05	0.37	154.75	0.36	155.45	0.35	156.14	0.34	156.84	0.33	157.53	0.32	85
86	153.72	0.38	154.42	0.36	155.11	0.35	155.80	0.34	156.48	0.34	157.17	0.32	157.85	0.32	86
87	154.10	0.37	154.78	0.36	155.46	0.35	156.14	0.34	156.82	0.33	157.49	0.32	158.17	0.32	87
88	154.47	0.37	155.14	0.36	155.81	0.35	156.48	0.34	157.15	0.33	157.82	0.33	158.48	0.31	88
89	154.84	0.36	155.50	0.35	156.16	0.35	156.82	0.34	157.48	0.32	158.13	0.31	158.79	0.30	89
90	155.20	0.36	155.85	0.35	156.51	0.34	157.16	0.33	157.80	0.32	158.45	0.31	159.09	0.30	90
91	155.56	0.36	156.20	0.35	156.85	0.33	157.49	0.32	158.12	0.32	158.76	0.31	159.39	0.30	91
92	155.92	0.35	156.55	0.34	157.18	0.34	157.81	0.33	158.44	0.32	159.07	0.30	159.69	0.30	92
93	156.27	0.35	156.89	0.34	157.52	0.33	158.14	0.32	158.76	0.31	159.37	0.30	159.99	0.30	93
94	156.62	0.34	157.23	0.34	157.85	0.32	158.46	0.32	159.07	0.31	159.67	0.30	160.28	0.29	94
95	156.96	0.34	157.57	0.33	158.17	0.33	158.78	0.31	159.38	0.30	159.97	0.30	160.57	0.29	95
96	157.30	0.34	157.90	0.33	158.50	0.32	159.09	0.31	159.68	0.30	160.27	0.29	160.86	0.28	96
97	157.64	0.34	158.23	0.33	158.82	0.32	159.40	0.31	159.98	0.30	160.56	0.30	161.14	0.29	97
98	157.98	0.33	158.56	0.32	159.14	0.31	159.71	0.31	160.28	0.30	160.86	0.28	161.43	0.27	98
99	158.31	0.33	158.88	0.33	159.45	0.31	160.02	0.30	160.58	0.30	161.14	0.29	161.70	0.28	99
100	158.64	0.33	159.21	0.31	159.76	0.31	160.32	0.30	160.88	0.29	161.43	0.28	161.98	0.28	100
101	158.97	0.32	159.52	0.32	160.07	0.31	160.62	0.30	161.17	0.29	161.71	0.28	162.26	0.27	101
102	159.29	0.33	159.84	0.31	160.38	0.31	160.92	0.30	161.46	0.29	161.99	0.28	162.53	0.27	102
103	159.62	0.32	160.15	0.31	160.69	0.30	161.22	0.29	161.75	0.28	162.27	0.28	162.80	0.27	103
104	159.94	0.31	160.46	0.31	160.99	0.30	161.51	0.29	162.03	0.28	162.55	0.27	163.07	0.26	104
105	160.25	0.32	160.77	0.31	161.29	0.29	161.80	0.29	162.31	0.28	162.82	0.28	163.33	0.27	105
106	160.57	0.31	161.08	0.30	161.58	0.30	162.09	0.29	162.59	0.28	163.10	0.27	163.60	0.26	106
107	160.88	0.31	161.38	0.30	161.88	0.29	162.38	0.28	162.87	0.28	163.37	0.26	163.86	0.26	107
108	161.19	0.30	161.68	0.30	162.17	0.29	162.66	0.28	163.15	0.27	163.63	0.27	164.12	0.26	108
109	161.49	0.31	161.98	0.29	162.46	0.29	162.94	0.28	163.42	0.27	163.90	0.26	164.38	0.25	109
110	161.80	0.30	162.27	0.30	162.75	0.29	163.22	0.28	163.69	0.27	164.16	0.27	164.63	0.26	110
111	162.10	0.30	162.57	0.29	163.04	0.28	163.50	0.28	163.96	0.27	164.43	0.26	164.89	0.25	111
112	162.40	0.30	162.86	0.29	163.32	0.28	163.78	0.27	164.23	0.27	164.69	0.26	165.14	0.25	112
113	162.70	0.30	163.15	0.29	163.60	0.28	164.05	0.28	164.50	0.26	164.95	0.25	165.39	0.25	113
114	163.00	0.29	163.44	0.29	163.88	0.28	164.33	0.27	164.76	0.27	165.20	0.26	165.64	0.25	114
115	163.29	0.29	163.73	0.28	164.16	0.28	164.60	0.27	165.03	0.26	165.46	0.25	165.89	0.25	115
116	163.58	0.29	164.01	0.28	164.44	0.27	164.87	0.26	165.29	0.26	165.71	0.25	166.14	0.24	116
117	163.87	0.29	164.29	0.28	164.71	0.28	165.13	0.27	165.55	0.26	165.96	0.26	166.38	0.24	117
118	164.16	0.29	164.57	0.28	164.99	0.27	165.40	0.26	165.81	0.25	166.22	0.24	166.62	0.24	118
119	164.45	0.28	164.85	0.28	165.26	0.27	165.66	0.26	166.06	0.26	166.46	0.25	166.86	0.24	119
120	164.73		165.13		165.53		165.92		166.32		166.71		167.10		120

M	$e = .71$		$e = .72$		$e = .73$		$e = .74$		$e = .75$		$e = .76$		$e = .77$		M
	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	°	Δ	
120°	164.73	0.29	165.13	0.28	165.53	0.27	165.92	0.26	166.32	0.25	166.71	0.25	167.10	0.24	120°
121	165.02	0.28	165.41	0.27	165.80	0.26	166.18	0.26	166.57	0.25	166.96	0.24	167.34	0.24	121
122	165.30	0.28	165.68	0.27	166.06	0.27	166.44	0.26	166.82	0.25	167.20	0.25	167.58	0.24	122
123	165.58	0.28	165.95	0.28	166.33	0.26	166.70	0.26	167.08	0.24	167.45	0.24	167.82	0.23	123
124	165.86	0.27	166.23	0.27	166.59	0.27	166.96	0.25	167.32	0.25	167.69	0.24	168.05	0.24	124
125	166.13	0.28	166.50	0.26	166.86	0.26	167.21	0.26	167.57	0.25	167.93	0.24	168.29	0.23	125
126	166.41	0.27	166.76	0.27	167.12	0.26	167.47	0.25	167.82	0.24	168.17	0.24	168.52	0.23	126
127	166.68	0.28	167.03	0.27	167.38	0.26	167.72	0.25	168.06	0.25	168.41	0.23	168.75	0.23	127
128	166.96	0.27	167.30	0.26	167.64	0.25	167.97	0.25	168.31	0.24	168.64	0.24	168.98	0.23	128
129	167.23	0.27	167.56	0.26	167.89	0.26	168.22	0.25	168.55	0.24	168.88	0.24	169.21	0.23	129
130	167.50	0.27	167.82	0.27	168.15	0.25	168.47	0.25	168.79	0.24	169.12	0.23	169.44	0.22	130
131	167.77	0.27	168.09	0.26	168.40	0.26	168.72	0.25	169.03	0.24	169.35	0.23	169.66	0.23	131
132	168.04	0.26	168.35	0.26	168.66	0.25	168.97	0.24	169.27	0.24	169.58	0.23	169.89	0.22	132
133	168.30	0.27	168.61	0.25	168.91	0.25	169.21	0.25	169.51	0.24	169.81	0.23	170.11	0.23	133
134	168.57	0.26	168.86	0.26	169.16	0.25	169.46	0.24	169.75	0.24	170.04	0.23	170.34	0.22	134
135	168.83	0.26	169.12	0.26	169.41	0.25	169.70	0.24	169.99	0.23	170.27	0.23	170.56	0.22	135
136	169.09	0.27	169.38	0.25	169.66	0.25	169.94	0.24	170.22	0.24	170.50	0.23	170.78	0.22	136
137	169.36	0.26	169.63	0.26	169.91	0.25	170.18	0.24	170.46	0.23	170.73	0.23	171.00	0.22	137
138	169.62	0.26	169.89	0.25	170.16	0.24	170.42	0.24	170.69	0.23	170.96	0.22	171.22	0.22	138
139	169.88	0.26	170.14	0.25	170.40	0.25	170.66	0.24	170.92	0.24	171.18	0.23	171.44	0.22	139
140	170.14	0.25	170.39	0.25	170.65	0.24	170.90	0.24	171.16	0.23	171.41	0.23	171.66	0.22	140
141	170.39	0.26	170.64	0.25	170.89	0.25	171.14	0.24	171.39	0.23	171.64	0.22	171.88	0.22	141
142	170.65	0.26	170.89	0.25	171.14	0.24	171.38	0.23	171.62	0.23	171.86	0.22	172.10	0.21	142
143	170.91	0.25	171.14	0.25	171.38	0.24	171.61	0.24	171.85	0.23	172.08	0.22	172.31	0.22	143
144	171.16	0.26	171.39	0.25	171.62	0.24	171.85	0.23	172.08	0.23	172.30	0.23	172.53	0.22	144
145	171.42	0.25	171.64	0.25	171.86	0.24	172.08	0.24	172.31	0.22	172.53	0.22	172.75	0.21	145
146	171.67	0.26	171.89	0.25	172.10	0.24	172.32	0.23	172.53	0.23	172.75	0.22	172.96	0.21	146
147	171.93	0.25	172.14	0.24	172.34	0.24	172.55	0.24	172.76	0.23	172.97	0.22	173.17	0.22	147
148	172.18	0.25	172.38	0.25	172.58	0.24	172.79	0.23	172.99	0.22	173.19	0.22	173.39	0.21	148
149	172.43	0.25	172.63	0.24	172.82	0.24	173.02	0.23	173.21	0.23	173.41	0.21	173.60	0.21	149
150	172.68	0.25	172.87	0.24	173.06	0.24	173.25	0.23	173.44	0.22	173.62	0.22	173.81	0.21	150
151	172.93	0.25	173.11	0.25	173.30	0.23	173.48	0.23	173.66	0.22	173.84	0.22	174.02	0.21	151
152	173.18	0.25	173.36	0.24	173.53	0.24	173.71	0.23	173.88	0.23	174.06	0.22	174.23	0.21	152
153	173.43	0.25	173.60	0.24	173.77	0.23	173.94	0.23	174.11	0.22	174.28	0.21	174.44	0.21	153
154	173.68	0.24	173.84	0.24	174.00	0.24	174.17	0.23	174.33	0.22	174.49	0.22	174.65	0.21	154
155	173.92	0.25	174.08	0.24	174.24	0.23	174.40	0.22	174.55	0.22	174.71	0.21	174.86	0.21	155
156	174.17	0.25	174.32	0.24	174.47	0.24	174.62	0.23	174.77	0.22	174.92	0.22	175.07	0.21	156
157	174.42	0.24	174.56	0.24	174.71	0.23	174.85	0.23	174.99	0.23	175.14	0.21	175.28	0.21	157
158	174.66	0.25	174.80	0.24	174.94	0.23	175.08	0.23	175.22	0.22	175.35	0.22	175.49	0.21	158
159	174.91	0.25	175.04	0.24	175.17	0.24	175.31	0.22	175.44	0.22	175.57	0.21	175.70	0.20	159
160	175.16	0.24	175.28	0.24	175.41	0.23	175.53	0.23	175.66	0.22	175.78	0.21	175.90	0.21	160
161	175.40	0.24	175.52	0.24	175.64	0.23	175.76	0.22	175.88	0.21	175.99	0.22	176.11	0.21	161
162	175.64	0.25	175.76	0.24	175.87	0.23	175.98	0.23	176.09	0.22	176.21	0.21	176.32	0.20	162
163	175.89	0.24	176.00	0.23	176.10	0.23	176.21	0.22	176.31	0.22	176.42	0.21	176.52	0.21	163
164	176.13	0.25	176.23	0.24	176.33	0.23	176.43	0.23	176.53	0.22	176.63	0.21	176.73	0.21	164
165	176.38	0.24	176.47	0.24	176.56	0.23	176.66	0.22	176.75	0.22	176.84	0.22	176.94	0.20	165
166	176.62	0.24	176.71	0.23	176.79	0.23	176.88	0.23	176.97	0.22	177.06	0.21	177.14	0.21	166
167	176.86	0.24	176.94	0.24	177.02	0.23	177.11	0.22	177.19	0.21	177.27	0.21	177.35	0.20	167
168	177.10	0.24	177.18	0.24	177.25	0.23	177.33	0.22	177.40	0.22	177.48	0.21	177.55	0.21	168
169	177.35	0.24	177.42	0.23	177.48	0.23	177.55	0.23	177.62	0.22	177.69	0.21	177.76	0.20	169
170	177.59	0.24	177.65	0.24	177.71	0.23	177.78	0.22	177.84	0.21	177.90	0.21	177.96	0.21	170
171	177.83	0.24	177.89	0.23	177.94	0.23	178.00	0.22	178.05	0.22	178.11	0.21	178.17	0.20	171
172	178.07	0.24	178.12	0.24	178.17	0.23	178.22	0.22	178.27	0.22	178.32	0.21	178.37	0.20	172
173	178.31	0.24	178.36	0.23	178.40	0.23	178.44	0.23	178.49	0.21	178.53	0.21	178.57	0.21	173
174	178.55	0.25	178.59	0.24	178.63	0.23	178.67	0.22	178.70	0.22	178.74	0.21	178.78	0.20	174
175	178.80	0.24	178.83	0.23	178.86	0.23	178.89	0.22	178.92	0.22	178.95	0.21	178.98	0.21	175
176	179.04	0.24	179.06	0.24	179.09	0.22	179.11	0.22	179.14	0.21	179.16	0.21	179.19	0.20	176
177	179.28	0.24	179.30	0.23	179.31	0.23	179.33	0.23	179.35	0.22	179.37	0.21	179.39	0.20	177
178	179.52	0.24	179.53	0.24	179.54	0.23	179.56	0.22	179.57	0.21	179.58	0.21	179.59	0.21	178
179	179.76	0.24	179.77	0.23	179.77	0.23	179.78	0.22	179.78	0.22	179.79	0.21	179.80	0.20	179
180	180.00		180.00		180.00		180.00		180.00		180.00		180.00		180

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